NETWORK WORLD

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Will Pentium bug your server? Page 8.

MCI takes a double hit

Foul play alleged in failed Nextel deal.

BY JOANIE WEXLER

Before its conspicuous parting of ways with wireless partner Nextel Communications, Inc. in September, MCI Communications Corp. spent millions of dollars on independent technical trials of the Nextel network. But sources say MCI got bogus feedback because the test results were tampered with.

Amidst the brouhaha of the federal radio spectrum auctions for broadband personal communications services (PCS), from which MCI has abstained, reports have surfaced of possible improprieties

See **Nextel,** *page 58*

Local access venture off to a slow start.

BY DAVID ROHDE

Washington, D.C.

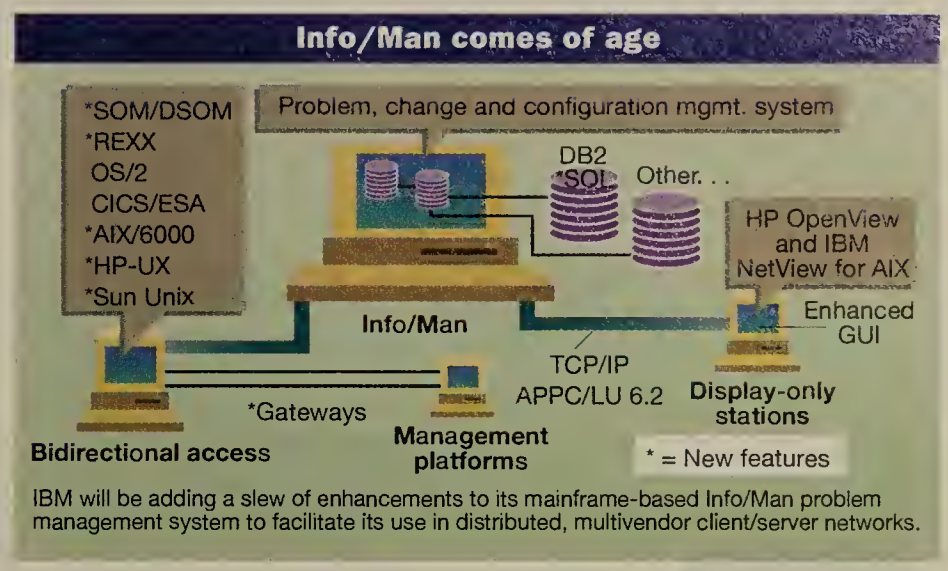
MCI Communications Corp.'s local telephone venture, announced with great fanfare at the beginning of the year, so far has little to show for itself.

Halfway through its two-year campaign to become a force in the local loop, the carrier's MCI Metro unit has established a presence in only three cities, with service said to be tightly circumscribed to a limited number of buildings.

In addition to its original Atlanta market, MCI Metro in recent weeks has turned up fiber loops in the downtown areas of Dallas and Washington, D.C., as well as in the suburban Washington business district of Tysons Corner, Va., according to MCI Metro officials.

But despite its huge war chest, twice the size of the largest independent com-

See **MCI Metro,** *page 58*



IBM will be adding a slew of enhancements to its mainframe-based Info/Man problem management system to facilitate its use in distributed, multivendor client/server networks.

IBM gets ready to revamp Info/Man

BY MICHAEL COONEY

Cary, N.C.

IBM next year will unveil new features that enable its Information/Management (Info/Man) problem management system to work with management platforms and workstations throughout the enterprise.

Info/Man will be enhanced to incorporate IBM object-oriented management technology, making it compatible with the company's next-generation network and systems management tools. It also will be outfitted with interfaces, functions and gateways that tie it to IBM's NetView/6000 and Hewlett-Packard Co.'s OpenView management platforms, as well as Windows, Unix and OS/2 workstations.

Info/Man is IBM's mainframe-based network configuration, problem and change management database, and the central repository for trouble tickets in most large IBM mainframe shops.

The new tools will let it gather information from a wider array of net resources while helping users mine Info/Man data from virtually anywhere in the enterprise to more easily track and solve problems.

"We plan to extend Info/Man as far

See **Info/Man,** *page 56*

IP address mess: Shortage poses problems for users

BY ADAM GAFFIN AND ELLEN MESSMER

Herndon, Va.

An acute shortage of official IP addresses, sparked by rising Internet popularity, is making it extremely difficult for companies installing TCP/IP nets to get the addresses they need.

The Internet Network Information Center (InterNIC), the organization funded by the government's National Science Foundation to hand out assigned

See **Addresses,** *page 4*

Santa beats back the glitch that almost stole Christmas in our holiday Teletoon. Page 44.

Lotus realigns messaging plan

BY ADAM GAFFIN

Cambridge, Mass.

The customer is always right, Lotus Development Corp. said last week, announcing it will break its next-generation messaging technologies into a series of products that users will be able to install without having to revamp their existing networks.

Lotus officials acknowledged they were facing growing resistance from customers at the prospect of having to gut their cc:Mail and Notes networks to gain any benefits from Lotus' newer client/server-based messaging and groupware technology.

Last week, the company announced a new server, dubbed the Notes/cc:Mail Communications Server (CommServer), that will bring client/server power to cc:Mail and new features to Notes.

The idea is similar to the concept of the Lotus Communications Server (LCS) announced last year, and will incorporate such LCS features as common message stores and directory services for cc:Mail and Notes, as well as support for the Simple Network Management Protocol.

But unlike LCS, CommServer will be designed so it can plug into existing cc:Mail and Notes networks. This will let users migrate to it at their own pace, rather than having to upgrade all their existing post offices or servers at once, Lotus offi-

See **Lotus,** *page 57*

SPECIAL FEATURE

Snail's pace of mgmt. change vexes users

A lack of coordination among vendors dashes users' interoperability hopes.

BY JOHN McCONNELL

Six months after a *Network World* survey uncovered mounting customer discord with net management products, few vendors can say they have made significant progress toward resolving the gamut of grievances some of you aired last May.

To their credit, net management vendors are starting to tackle the issues of most pressing concern to you, but they are doing so incrementally, with no quantum leaps expected.

Suppliers of both SNMP-based platforms and hub management tools have undertaken initiatives to

Continued on page 42

Briefs

Big Brother is watching. AT&T is expected to soon roll out a global management service that allows users and AT&T representatives to track network performance and ensure that the carrier is living up to its contractual obligations. The service, which recently completed a trial run in Singapore, will let users and AT&T reps monitor from a Unix workstation the levels of service provided by the AT&T network. The service uses an AT&T-defined workflow application that integrates ISICAD, Inc.'s Command physical management system and InfoManager database access tool with Remedy Corp.'s Action Request trouble-ticketing system.

What I really meant. Microsoft Corp. is expected to state its position regarding implementation of the Desktop Management Task Force's (DMTF) Desktop Management Interface (DMI) in Windows 95 in about three to four weeks, according to a DMTF spokesman. Microsoft recently said it will not implement all of the DMI interfaces in Windows 95, a move that threatens to fragment the industry on standards for desktop management (*NW,* Nov. 21, page 1). Also, the DMTF will publish a DMI compliance guideline document in the first quarter of 1995 and plans to address DMI interoperability testing.

JOHNSON

Rumors squashed. Sources last week said Bay Networks, Inc. and Centillion Networks, Inc. are establishing a reselling partnership that will let Bay resell Centillion's token-ring and Asynchronous Transfer Mode switches. The deal is still in negotiations but could be consummated by the end of January. Centillion President Bobby Johnson would not comment on the squelched rumors that Centillion sought an acquisition by Bay.

Organized opposition. Officials at Lotus Development Corp. said they are racing to fix bugs uncovered by early users of the new version of its Organizer calendaring application, such as its inability to work with certain VGA monitors or maintain document links in files converted from older versions.

Organizer 2.0 is aimed at enterprise network use. (Its internal database has been beefed up to handle far more entries.) But users on a CompuServe Lotus forum said the bugs, coupled with what they described as turtle-like performance, could keep them from recommending its purchase to their employers.

Web notes. Lotus Development Corp. next month will unveil its InterNotes suite for connecting Notes with the Internet. Key to the project is a $25,000 server that allows real-time bidirectional interaction between World-Wide Web users and Notes databases. Also under development is a Notes/Usenet conferencing link, a beta version of which is already available for downloading at http://www.notes.net on the Web.

Logica, Inc. hopes to beat Lotus to market with its Tool for Internet/Lotus Exchange, a $2,995 application for Windows and OS/2 that can convert Notes databases into Web documents. Information about the product is available at http://www.shelby.com/tile/ on the Web.

DECUS doings. In January, Transarc Corp. will ship Encina for OSF/1, a new version of its transaction processing monitor for Digital Equipment Corp.'s OSF/1 Unix platforms. Encina for OSF/1 costs $150 for client software and from $800 to $2,400 for server software. Transarc showed off the new version at DECUS '94, an annual gathering of Digital users held in Anaheim, Calif. Dec. 12-14. Also at the show, Oracle Corp. demonstrated a version of its Oracle7 database running on a 64-bit Digital Alpha system. The companies said 64-bit hardware, which performs about 600 times faster than current 32-bit technology, will be especially useful for running Oracle's Media Server.

Get a license. The National Telecommunications and Information Administration (NTIA), which controls government radio spectrum use, last week asked the Federal Communications Commission to consider setting aside 2,402 to 2,417 MHz as a permanent unlicensed band where equipment can operate freely on a shared basis. The NTIA said the FCC should also set aside the 902-MHz to 928-MHz band for use with automated vehicle monitoring systems and nonlicensed equipment users.

For details on how to reach us, see page 59.

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Ethernet switches

Our continuing series brings four store-and-forward Ethernet swithches in for speed trials. **Page 39.**

Network HELP desk

Network World *tracks down answers to your questions regarding products, services, technologies or disputes with vendors. Please submit questions to Alison Conliffe at (800) 622-1108, via fax at (508) 820-1103 or (508) 820-3467, via the Internet at aconliff@world.std.com or via CompuServe at 75471,2725.*

Your recent editorial that brought the productivity gains of LAN-based video into question hit the nail on the head (Oct. 17, page 50). As you pointed out, using LAN-based video for training is one of the few areas that has potential productivity benefits. Do you have a list of vendors that sell video equipment for the PC, such as video processors as well as authoring systems for courseware?
Denis Bond, Lanham, Md.

If you can't find what you need in our desktop videoconferencing Buyer's Guide (Oct. 31, page 50), you can try calling a few systems integrators. Carolyn Manjourides, president-elect of the International Teleconferencing Association's (ITCA) Boston/Hartford Group suggests you contact Peter Norse of EDS Corp. in Boston at (617) 832-6640; Tom Taylor of Entex Information Services, Inc. in New York at (914) 935-3770; and Ed Willins of Crimson Tech at (617) 499-4637.

Integrators often have a firm handle on who provides the pieces needed to build PC-based desktop videoconferencing systems on your own, as well as who provides the software needed to develop specific applications. However, if you're more interested in buying a prepackaged desktop videoconferencing system and adding authoring software, Manjourides suggests contacting Applied Business Telecommunications, Inc. in Livermore, Calif., at (800) 829-3400. The firm publishes the Desktop Videoconferencing Report, which provides a detailed look at products and is the executive management firm for the U.S. Distance Learning Association, which maintains information about using videoconferencing as a teaching tool.

PictureTel Corp. of Danvers, Mass., also announced its Socrates product earlier this year. Socrates works with PictureTel's System 4000 videoconferencing unit. It enables an instructor to build custom distance learning environments by controlling the operation of remote cameras as well as peripherals such as VCRs, slide cameras

See **Help desk,** *page 38*

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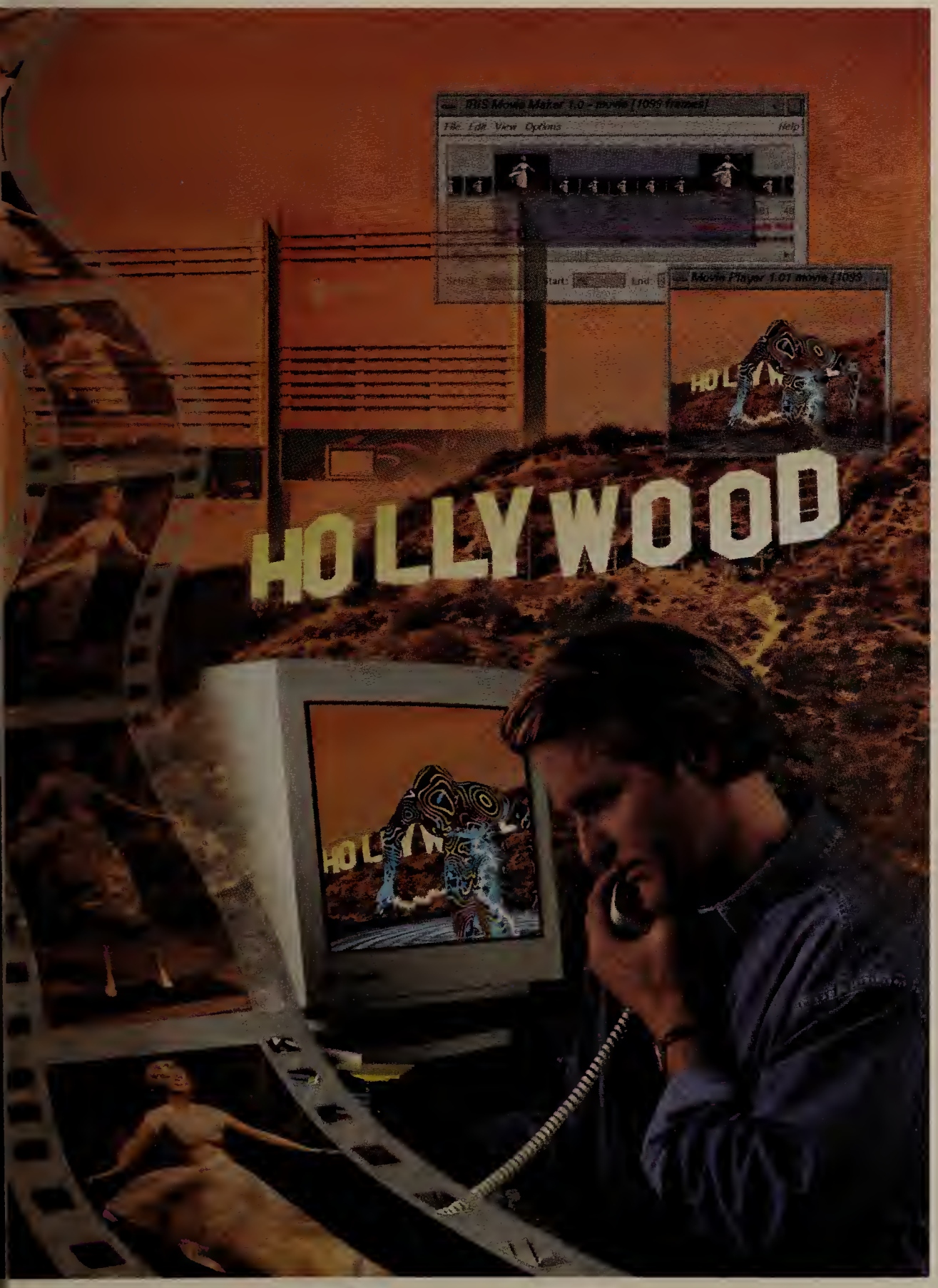

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Addresses

Continued from page 1

addresses to the public, is now forcing companies to submit detailed engineering plans to qualify for addresses.

The InterNIC can take months to pore over individual requests and then wind up rejecting them anyway, gumming up companies' project schedules and leading to difficulties in planning router configurations.

As a result, some users are opting to set up TCP/IP networks without assigning InterNIC addresses to their computers — an approach that can be wise for security reasons. But without a unique and valid network address, computer hosts will not be able to connect to the global Internet without some extra work involved.

ADDRESSING THE PROBLEM

The Internet address structure provides for three types of addresses: Classes A, B and C (see graphic). While this hierarchical scheme seemed fine several years ago, the 'Net's explosive growth has proven the scheme to be inadequate in terms of available net addresses and structure.

The ABCs of Internet addresses

Class A Up to 250 hosts

Class B Up to 64,000 hosts

Class C Up to 16 million hosts

According to a white paper from Network Translation, a maker of Internet address conversion tools:

"Many organizations have networks that fall somewhere between the Class C and B magnitudes. A network manager with 4,000 hosts, for example, faces the dilemma of using 16 Class C registrations or 1/16 of a Class B [registration]."

GRAPHIC BY TERRI MITCHELL

Class B address blocks support up to 64,000 host computers, while Class C's can handle about 250. For years, companies have typically played it safe — figuring the number of users on their network would grow — and asked the InterNIC for at least one Class B address block. But where they once heard "yes," increasingly they are hearing "no way" or being offered multiple Class C address blocks instead.

"We are giving out B's, but very seldom," acknowledged Scott Williamson, principal investigator at the InterNIC.

Nearly 60% of Class B address blocks have been depleted, leaving about 7,000 more to assign.

But companies that can prove a need can still get Class B's.

American Standard, Inc. of Piscataway, N.J., was recently awarded one

Stephen Pudimott, communications specialist, said he had to prepare detailed reports showing exactly how the company would deploy IP addresses and subnets across some 200 corporate sites around the world, as well as show growth projections over the next five years. The company is looking at 25,000 to 30,000 hosts divided into 510 subnets, he said.

Pudimott said InterNIC granted the firm a Class B in about 10 days. "I was really pleasantly surprised," he said.

Thomas Nolle, president of Voorhees, N.J.-based consultancy CIMI Corp., has seen two corporate clients' Class B address requests rejected by the InterNIC during the last month, despite having presented detailed engineering plans.

"You're never going to make them happy," said Nolle. "They gave both these companies a couple of C's. One company went back for another C and was told they would have to provide justification for that."

Only about 20% of Class C's are used up, but even they can be tough to get from the InterNIC, which customarily tells network managers to get their Class C's from an Internet service provider instead.

Many net managers view multiple C's as a poor substitute for a Class B address assignment anyway.

"Large groups of multiple C's are hard to manage," said Robert Moskowitz, technical support specialist at Chrysler Corp., which found it hard to get Class B's from the InterNIC even two years ago.

Nolle maintains most companies do not know how to use multiple C's.

"If you set up the routing table wrong, you will end up going through a router just to get to another Class C address on the same local-area network," he said.

"With a B, you can easily set up a subnetwork structure to accommodate the routing structure," Nolle said. "The problem with C's is there has to be a separate routing table entry for each Class C address unless you're using Classless Inter-Domain Routing."

Now an Internet standard implemented among a number of IP service providers, CIDR lets contiguous multiple C's be aggregated under a subnet mask. It also dramatically reduces the burden on routing tables.

The InterNIC has assigned CIDR blocks to service providers, which in turn are handing the blocks out to their network customers (see story, this page). Network managers can keep the CIDR block intact for use in their routers or break it into its component C's — but there are a few catches.

"CIDR brings no advantage and no pain to the end user provided they use Open Shortest Path First [routing protocol] and variable submasking," Moskowitz said. "But if you're using Routing Information Protocol, you've got some serious management problems."

Service providers view CIDR as the Band-Aid to hold the Internet together until the next-generation Internet Protocol (IPng, formally IP Version 6) is completed, and router and application products support it. IPng creates a new addressing hierarchy with far more addressing space.

CIDR raises address ownership issues

The Internet's registration authority, the Internet Network Information Center (InterNIC), gives out network addresses to service providers as well as end-user companies, but the question of who actually "owns" the addresses is uncertain.

The issue is of more than academic interest since network managers who assign InterNIC network addresses to large numbers of computers and set up routing tables would find the underlying thread ripped out of their networks if these addresses were ever taken away.

The InterNIC has no clear policy about whether the addresses it hands out are considered the property of the InterNIC, the service provider or the organization end user. "This is under debate, and it's a controversial issue," acknowledged Scott Williamson, the InterNIC's principal investigator.

Service providers seem to consider the question an awkward one, especially when it comes to Classless Inter-Domain Routing (CIDR), a way of aggregating multiple Class C addresses together to simplify routing tables.

"We try to explain to customers that it makes better sense technically to turn the address back in if they go to another service provider or simply don't need it," said Steve Heimlich, manager for infrastructure development at Advanced Network & Services, Inc. "But we don't want to force our customers to do this."

Larry Kraft, manager of Sprint Corp.'s IP service, SprintLink, said service providers do not want to break up the CIDR block of contiguous Class C address blocks because it defeats the purpose of CIDR — to reduce the size of the routing tables and the amount of router advertising.

But some of Sprint's IP resellers claim they are hearing contradictions from Sprint about the matter. Jason Stratton, head of Arlington, Va.-based NovaNet, Inc., said, "Sprint's not clear on the ownership issue." He said that one time Sprint told him he could keep the net addresses he had if he switched service providers, and another time said he couldn't.

Another IP service provider, Performance Systems International, Inc. (PSI), does have a clear policy and has hooked its pricing plans around it.

"We are encouraging our customers to use CIDR numbers, and we offer a substantial discount in their monthly rate if they do," said Jim Bergmann, assistant manager at PSI. "With ordinary Class C's, the user has ownership but not with the CIDR block. If they leave PSI, they have to give them up."

BY ELLEN MESSMER

Novell to show off net mgmt. expansion plans

BY KEVIN FOGARTY

Novell, Inc. early next year will discuss enhancements to its NetWare management strategy, including plans to port key NetWare Management System (NMS) functions to IBM's NetView and to make NMS management agents smarter.

Novell is working with IBM to recode NMS management applications, including server discovery and the server management agents, to run natively on NetView for AIX, according to sources close to Novell.

"One of the key things that's been missing is the operation of NMS components in the NetView environment."

Running NMS applications in NetView will give users more direct control of NetWare domains in heterogeneous nets from a single console, sources said.

This development builds on an integration agreement the companies announced last month (*NW*, Nov. 14, page 1). They are developing add-on modules for the two systems that would let NMS agents populate the NetView for AIX database with management information. The modules also will give NetView for AIX a remote console capability for reconfiguring NetWare networks.

"One of the key things that's been missing is the operation of NMS components in the NetView environment," said one source close to IBM. "You really will have integrated management of the NetWare server platform from the NetView base."

Walter Dymek, an analyst at Datapro Information Services Group in Delran, N.J., added, "Novell's strategy with NetView positions NMS as a strong element management system, in cooperation with an enterprise management system."

It also will give IBM a major boost in NetView sales by making the management platform attractive to NetWare users.

Steve Dauber, product-line manager for network management at Novell, declined to confirm the development but said Novell would continue integrating NMS with NetView and other platforms.

But Dauber did say Novell's net management vision involves converting its NMS agents to the Simple Network Management Protocol format and working with third-party software developers to build applications to talk to those agents.

Novell also is adding intelligence to the agents to let them handle load balancing, reroute packets around bottlenecks and take on other common management chores. The revamped agents should appear in 1995.

Novell also plans to release in 1995 an application that will act as a front end for both NetWare Directory Services and NMS, Dauber said. Users will be able to launch both administrative and management functions from the same graphical interface with the new application, he said.

Senior Editors Michael Cooney and Jim Duffy contributed to this report.

SCO gains Windows edge via Visionware

BY PEGGY WATT

Santa Cruz, Calif.

Under new leadership, The Santa Cruz Operation, Inc. (SCO) last week acquired Visionware, Ltd., a British firm that markets Windows-to-Unix integration products.

The $14.75 million acquisition gives SCO, which markets Unix operating systems and development tools, a complete desktop-to-enterprise, cross-platform connectivity solution.

Visionware's PCX Server and PC Connect desktop products provide X Window System integration for Windows clients, allowing them to communicate with systems running SCO's Unix-based Open Server software. Visionware also offers terminal-emulation software and a SQL database application, and is readying

See SCO, *page 58*

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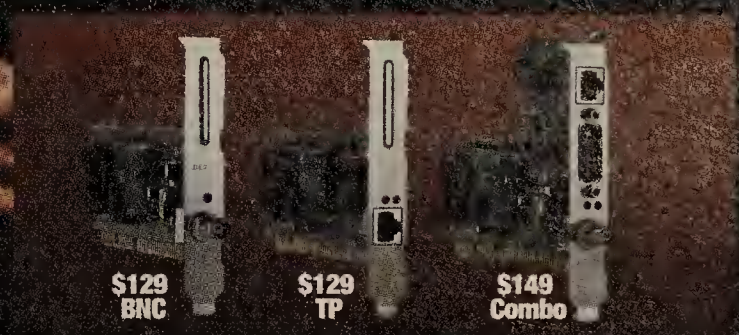

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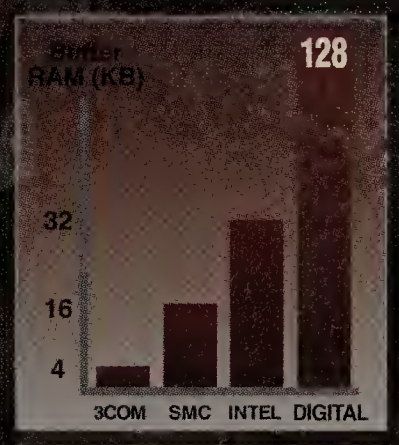

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NETWORKS THAT GO THE DISTANCE

Delving into the Pentium problem

BY JODI COHEN AND MARGARET DORNBUSCH

Intel Corp.'s flawed Pentium chip should have little impact on file and print servers, but users with plans to install Pentium-based application servers might want to think twice.

While that is the wisdom of various industry observers and players, users are not quite sure who to believe.

"We had tentative plans for Pentium-based servers, but I'm certain now that our plans have been moved off a long ways due to the problems related to the chip," said Gregg Skinner, business planner for MIS at Pepsi-Cola Bottling Co. of California. "The general perception is that even though Intel claims that the problems are few and far between, and the likelihood of them occurring with most applications

See **Pentium**, *page 57*

AT&T-Unisource plans expanded service in Europe

BY TIM GREENE AND JOANIE WEXLER

As expected, AT&T last week announced a joint venture with Unisource that promises to offer an array of voice and data communications services to 18 European countries by the middle of next year.

The new entity does not yet have a name, nor has it targeted a start-up date, but an AT&T spokesman said the company will offer frame relay, virtual private network, private-line, messaging and managed data services, plus additional offerings as demand develops.

The offerings combine those now offered separately by AT&T and Unisource, which is a joint venture of post, telegraph and telephone administrations in the Netherlands, Sweden and Switzerland. The PTT in Spain has announced plans to buy in.

AT&T and Unisource had worked together previously as the European provider in AT&T's WorldPartners Alliance, a joint venture that provides private-line, frame relay and virtual network services. The new AT&T-Unisource joint venture will pick up Unisource's interest in WorldPartners.

The new venture will be held 40% by AT&T and 60% by Unisource, starting with $200 million in assets and 2,000 employees.

One of its goals is to provide uniform, standard network services under a single brand name throughout participating countries, although it acknowledges that is not always possible.

"We will provide WorldSource services or the best available in countries where we have no WorldPartner [ally]," said AT&T spokeswoman Marge D'Amico. "Most savvy businesspeople are usually happy to settle for the best available."

Unisource and AT&T both said they will contribute their current European customers to the joint venture, which will give it a starting client base of 300 multinationals.

The venture will compete with the proposed alliance of Deutsche Bundespost Telekom, France Telecom and Sprint Corp., and with BT-MCI Communications Corp. (see graphic, page 57).

The BT-MCI joint venture, Concert, has a definite

See **Europe**, *page 57*

PCS auction not yet heating up

BY DAVID ROHDE AND JOANIE WEXLER

Washington, D.C.

If personal communications services (PCS) are going to take the wireless world by storm, it was hard to tell from the second week of the broadband PCS auction sponsored by the FCC.

While the auction is expected to continue for several more weeks, there was widespread surprise that the bidding still had not cracked $1 billion by last Thursday morning's round.

In one top market — the two available licenses for the region surrounding Dallas and Fort Worth, Texas — no bidder has trumped the high bids placed on Dec. 5, the first day of the auction.

The biggest available license — for the region surrounding New York City — continued to see action, though. On Thursday, WirelessCo, L.P., a consortium comprising Sprint Corp. and three cable television giants, leapfrogged Craig McCaw's earlier $171.7 million bid to take the lead with $187.5 million.

Bidding was said to be hurt by a recent spate of reports indicating that because of a variety of operational issues, it may take five to seven years for license holders to make any kind of return on PCS investments. Ironically, a glimmer of progress was made last week in a key problem area that analysts have said must be resolved for PCS to gain broad market acceptance — the standards arena.

While there are currently seven technologies on the table as proposed PCS standards, interoperability efforts were launched last week for one candidate, Code Division Multiple Access (CDMA), to allow devices running the CDMA protocol to traverse nets of different frequencies without skipping a beat.

Last week, the 30-company-strong CDMA Developers Group formed a working group to join forces with the PCS standards committee to render CDMA interoperable in both today's cellular 900-MHz frequencies — for which it was originally groomed by QualComm Corp. — and the PCS spectrum now being allocated between 1.8 GHz and 2 GHz.

Broadband PCS: high bidders in 10 largest markets

PCS AUCTION *update*

Shown are the high bidders for each of the two available 30-MHz blocks in each market. Three markets – New York, Southern California and Washington, D.C.-Baltimore – have only one block available due to an earlier award.

Round 12, Thursday, Dec. 15

Region	Bidder	Bid (in millions)
New York	WirelessCo	$187.5
Southern California	Pacific Telesis	$57.4
Chicago	WirelessCo	$17.2
	AT&T	$20.3
San Francisco Bay area	WirelessCo	$72.4
	Pacific Telesis	$72.4
Detroit	WirelessCo	$12.0
	GTE	$10.0
North Carolina	AT&T	$5.9
	BellSouth	$9.8
Dallas-Fort Worth, Texas	WirelessCo	$3.9
	PCS Primeco	$10.5
Boston-Providence, R.I.	Boston PCS Venture	$34.0
	WirelessCo	$35.7
Philadelphia	CCI Data, Inc.	$17.4
	SBC	$15.4
Washington, D.C.-Baltimore	GTE	$30.7

PCS Primeco = NYNEX, Bell Atlantic, US WEST and AirTouch Communications

3Com to marry standards to improve SNA routing

BY JIM DUFFY

Santa Clara, Calif.

In the first half of 1995, 3Com Corp. will enhance its NetBuilder II routers with software that enables them to more efficiently handle Systems Network Architecture traffic in a frame relay network.

The software, an 8.X release of the NetBuilder II operating system, combines the properties of Data Link Switching (DLSw) with RFC 1490, an IETF standard for transmission of multiprotocol traffic over frame relay.

With the release, remote routers will be able to locally acknowledge SNA and Network Basic I/O System traffic — a feature of DLSw — yet ship it to and from a data center without encapsulating the data in IP packets. Instead, users can send the traffic over frame relay links, thereby eliminating the overhead of IP encapsulation and obviating the need for a NetBuilder II at the data center.

Remote site users will be able to connect a NetBuilder II directly to an IBM front-end processor (FEP) running Network Control Program 7.1 or higher, which offers frame relay support.

"We're merging this frame relay access technology with our Data Link Switching technology," said David Bryant, director of IBM internetworking at 3Com. "You can sort of view this as Data Link Switching over frame relay"

DLSw was conceived by IBM as a way to route SNA and NETBIOS through IP backbones, but 3Com claims DLSw concepts can be applied to any network protocol (*NW*, Sept. 5, page 1). Currently, 3Com offers RFC 1490 support for IBM's Advanced Peer-to-Peer Networking technology and for AppleTalk and IPX data.

Cisco Systems, Inc. and Bay Networks, Inc. recently filled out their DLSw and RFC 1490 offerings for IBM internetworking, but so far, neither firm combines DLSw with RFC 1490 in a manner that avoids IP encapsulation.

TWO GOALS

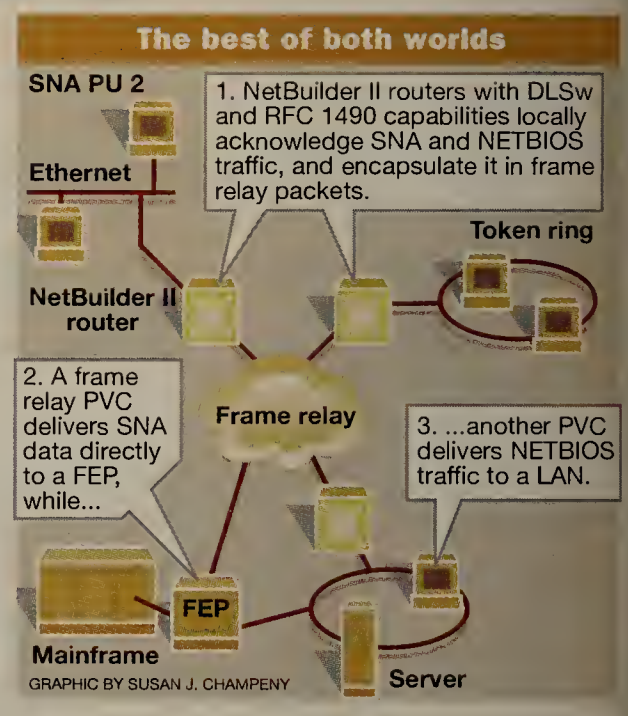
3Com hopes to accomplish two things by combining the two specs. The first is to avoid session time-outs by locally acknowledging SNA and NETBIOS traffic at the remote site. LAN-attached end stations run very short acknowledgment timers and tend to time-out as they wait for acknowledgments from the FEP at the other end of the frame relay permanent virtual circuit (PVC).

The second is to take advantage of DLSw's filtering capabilities to keep NETBIOS broadcast frames and other unnecessary traffic off the frame relay circuit, Bryant said.

For cost savings, 3Com recommends putting SNA, NETBIOS and multiprotocol LAN traffic on one PVC. Users can then divide bandwidth so that higher priority traffic gets a bigger chunk of the PVC.

Likewise, certain traffic can be prioritized to take a higher percentage of the bandwidth above the committed information rate, if any is available.

The software can also make a single PVC look like a multidrop SNA circuit, obviating the need to dedicate a single PVC to every PU Type 2 node, as is the case in typical frame relay nets.



"We can do a lot to reduce the amount of overhead in your network and the amount of bandwidth that you need to deliver a consistent level of performance for a given application," said William Donovan, product-line manager in 3Com's Network Systems Division.

USER REACTION

Users were unfamiliar with 3Com's work but are anxious to evaluate it.

"Neat stuff, I like it," said Ken Moerman, a systems specialist for First Security Information Technology in Salt Lake City. "It obviously gets rid of the router between the FEP [and the network], but I don't know that I would be using [that capability] right now."

Moerman said he would need to investigate 3Com's development further to determine its benefits.

Similarly, analysts were intrigued by 3Com's approach and anxious to learn more.

"Sounds interesting. I know other people have the components, but I don't know if I've seen anybody put them together in quite such a manner," said Val Sribar, a senior research analyst at META Group, Inc. in Reston, Va. "I think that idea has some potential."

3Com will deliver the capability as a standard feature of the NetBuilder II software.

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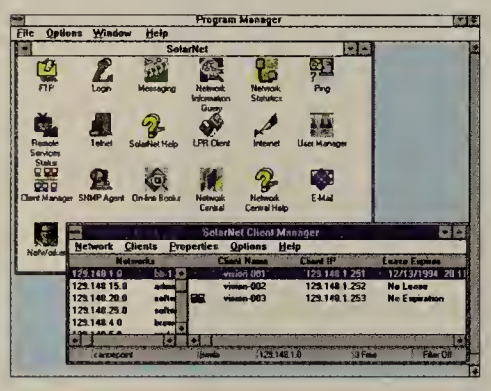

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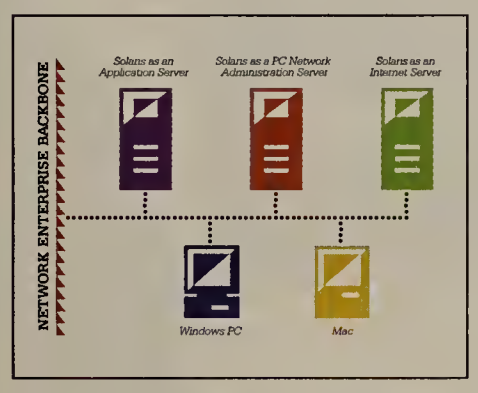

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PCIAD

Sybase, SGI to give users graphical access to data

BY BARB COLE

Emeryville, Calif.

Sybase, Inc. this week will announce that it is working with server maker Silicon Graphics, Inc. (SGI) to give users a more graphical way to search databases.

Sybase's next-generation database — dubbed System 11 — runs on SGI's symmetric multiprocessing servers and will let users view data in a 3-D format, according to Nancy Cibotti, business development manager at Sybase. The SGI-primed version of System 11 probably will roll out in the next 12 to 18 months, she said.

This graphical approach may prove more efficient than traditional queries for fetching some kinds of data across a network. It should enable users to find data more easily, rather than tying up network bandwidth with multiple blind requests for data.

Employing data visualization tools — special application development software from SGI and third parties — users can build database applications that work with Sybase databases and exploit the graphics processing capabilities of SGI computers, Cibotti said.

Ihab Abu-Hakima, director of marketing at SGI, said the companies would target the data warehousing niche with their offering.

The more, the merrier

Sybase is not the first database firm to try and give end users a more visual way to access data. IBM last summer rolled out Ultimedia Manager 1.0, a tool that can retrieve DB2 data based on its color, text, shape and layout.

FASTER THAN SQL?

Abu-Hakima said using visual metaphors of data, such as a 3-D spreadsheet, can be a more efficient way to find data than constructing SQL queries. With visual metaphors, developers can use colors and shapes to represent data so users can more easily find what's relevant to them. Also, users may immediately drill down on more detailed data as needed, Abu-Hakima said.

Data visualization tools are expected by industry observers to become increasingly important as relational databases get more object-oriented features. In storing objects, several physical attributes may be held along with the actual data.

The idea of mixing databases and graphics appeals to most users. "I would be very interested in something like this. I was interested in the whole [Sybase] Gain Momentum strategy, even though it never took off," said Corey Isaacson, principal at CompuFlex International, Inc. in Los Angeles.

Gain Momentum, Sybase's development tool for building multimedia applications, currently runs on SGI hardware but does not let developers build the visual metaphors of data.

Paul Cubbage, an analyst at Dataquest, Inc. in San Jose, Calif., said the idea of giving end users a visual look at data is a good one, but "don't expect this market to be worth $100 million by next year."

✆ Sybase: (510) 922-3500; SGI: (415) 960-1980.

Big Apple show to ring in New Year

BY PEGGY WATT

San Francisco

With the new year comes the MacWorld Expo, which will open Jan. 4 and feature a selection of new and enhanced Macintosh connectivity products from Apple Computer, Inc. and a host of supporting vendors.

Apple will show at MacWorld its updated AppleSearch information search and retrieval program, which now supports Internet and LAN resource searches.

Version 1.5 lets users enter search data for the Internet's Wide-Area Information Servers (WAIS) from the Macintosh desktop. Systems administrators can specify WAIS database access by user or workgroup, and can automate searches to occur during off-hours.

A single-site license for an unlimited number of AppleSearch clients costs $1,799. The product is shipping now.

The following announcements will also be made to coincide with the show:

■ Miramar Systems, Inc. and Apple are both marketing a bidirectional file exchange tool for Macintosh and Windows systems on a LAN. Personal MacLAN Connect 5.0 now includes an AppleShare Client component that lets Windows users access Macintosh hard drives and log on to an AppleShare or the AppleTalk File Protocol file server. Macintosh users can access hard-disk data on Windows machines through the Chooser.

"Whatever platform you want to use, there shouldn't be a penalty," said Neal Rabin, Miramar's president. "The Mac should be a good

See **Big Apple**, *page 56*

CA adds SNMP to its systems mgmt. pack

BY JIM DUFFY

Islandia, N.Y.

Computer Associates International, Inc. last week unveiled a new release of its CA-Unicenter systems management product that adds support for SNMP, enabling users to manage network devices as well as distributed systems from a single workstation.

The addition of Simple Network Management Protocol support in Release 1.1 of CA-Unicenter will let users integrate the system management software with leading SNMP platforms from Hewlett-Packard Co., IBM and SunSoft, Inc.

Version 1.1 will run as an application on HP's OpenView, IBM's NetView for AIX or SunSoft's SunNet Manager platforms, CA said. CA-Unicenter will be able to send and receive SNMP TRAP information on events detected by the systems management product, such as security violations or termination of a scheduled job.

Like any SNMP event, the system management event causes the network topology map on the screen to change color. Following this notification, the network management platform can invoke a CA-Unicenter application to investigate, analyze and respond to the event.

CA-Unicenter also can take automated, preemptive action, such as rerouting a print job or launching a script file command. With SNMP support, network managers can program CA-Unicenter to initiate certain actions, such as shutting down an SNMP-equipped device if it fails.

SNMP support will not pit CA-Unicenter against well-established SNMP platforms like OpenView, NetView for AIX and SunNet Manager, analysts said. Rather, it will augment the capabilities of both CA-Unicenter and those platforms to determine the relationships between network devices and the systems attached to them.

"It is strategic for CA to recognize that they should not and cannot be in the network management business, but to meet their users' demands, they need to help users integrate network and systems management," said Peter Kastner, an analyst at the Aberdeen Group in Boston.

"We're bridging the gap now between operations and network management, and it's really what users are coming to require," he said.

CA-Unicenter Version 1.1 is available at no extra charge to CA customers with active maintenance contracts. For new users, pricing starts at about $2,000 for a Unix workstation.

CA: (516) 342-5224.

➟IDG News Service contributed to this story.

INTERNET *tip*

BY ADAM GAFFIN

One in a series of occasional tips on Internet-based information services.

Network management

Jeff Murphy at the State University of New York at Buffalo has created a Web site devoted to network management. Resources include:

- ✔ **Product reviews written by users**
- ✔ **Links to archives of SNMP and related software**
- ✔ **Archives of the comp-.dcom.net-management Usenet newsgroup**

To access:
Point your Web browser at **http://smurfland.cit.buffalo.edu/NetMan/index.html** and proceed from there.

Gaffin can be reached at **agaffin@world.std.com** via the Internet.

T3plus bags ATM inverse mux plan, shifts to SONET

BY MICHAEL CSENGER

Santa Clara, Calif.

Abandoning its T-1 ATM inverse multiplexing initiative due to lack of interest among larger players, T3plus Networking, Inc. is shifting its focus to developing an intelligent Synchronous Optical Network (SONET) mux.

"We decided it's not worth fighting the good fight," said T3plus President and Chief Executive Officer James Mongiello, who joined the firm six months ago. An NxT-1 Asynchronous Transfer Mode inverse multiplexing standard will take a couple of years to develop, he said, and without the support of larger vendors that carry weight in the ATM Forum, T3plus is not in a position to blaze the trail.

"The bigger companies are busy building ATM switches with OC-3 interfaces, and there's just not a lot of interest among them," Mongiello said.

Thomas Nolle, president of the CIMI Corp. consultancy in Voorhees, N.J., saw deeper meaning in the T3plus decision. "There's a mistake happening in the marketplace, and we're eventually going to be sorry about it," he said.

NO RESPECT

Fractional T-3 and NxT-1 ATM inverse multiplexing, which lets users logically pool multiple T-1 channels into a larger pipe, deserves more effort than it gets, Nolle said. Users could more easily cost-justify broadband services if a portion of their access line carried ATM while the rest carried traditional voice and multiplexed data.

"Other companies besides T3plus have looked at the same idea, but they face a lot of specialized interests at the ATM Forum. [The larger vendors] may feel that an ATM inverse multiplexing standard might work against them" by opening the field to a host of smaller access device vendors, Nolle said.

Instead, T3plus is developing the SONET-based Broadband Access Multiplexer, which Mongiello said will bring to SONET what intelligent multiplexers brought to T-1. He described it as a modular product with about 12 to 16 slots ranging in price from less than $20,000 to the low $30,000 range.

To be announced later next year, the mux will be a step up from current SONET offerings, which he said have limited bandwidth management capabilities and are basically akin to the digital cross-connects that T-1 muxes supplanted.

The Broadband Access Multiplexer will give users and carriers a more efficient way to provision the SONET links over which ATM and other types of traffic ride, according to Mongiello.

"We're seeing a lot of firms handing off their Ethernet LAN to a carrier or putting all their metropolitan voice and data traffic over a SONET ring," he said.

In their scramble to meet demand for such services, carriers are deploying access devices that cannot efficiently share bandwidth. T3plus hopes to change all that.

"Just as our whole industry now is built on T-1 access, you're going to see the same thing happen with SONET," Mongiello said.

✆T3plus: (408) 727-4545.

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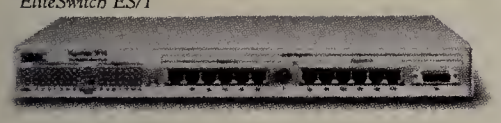

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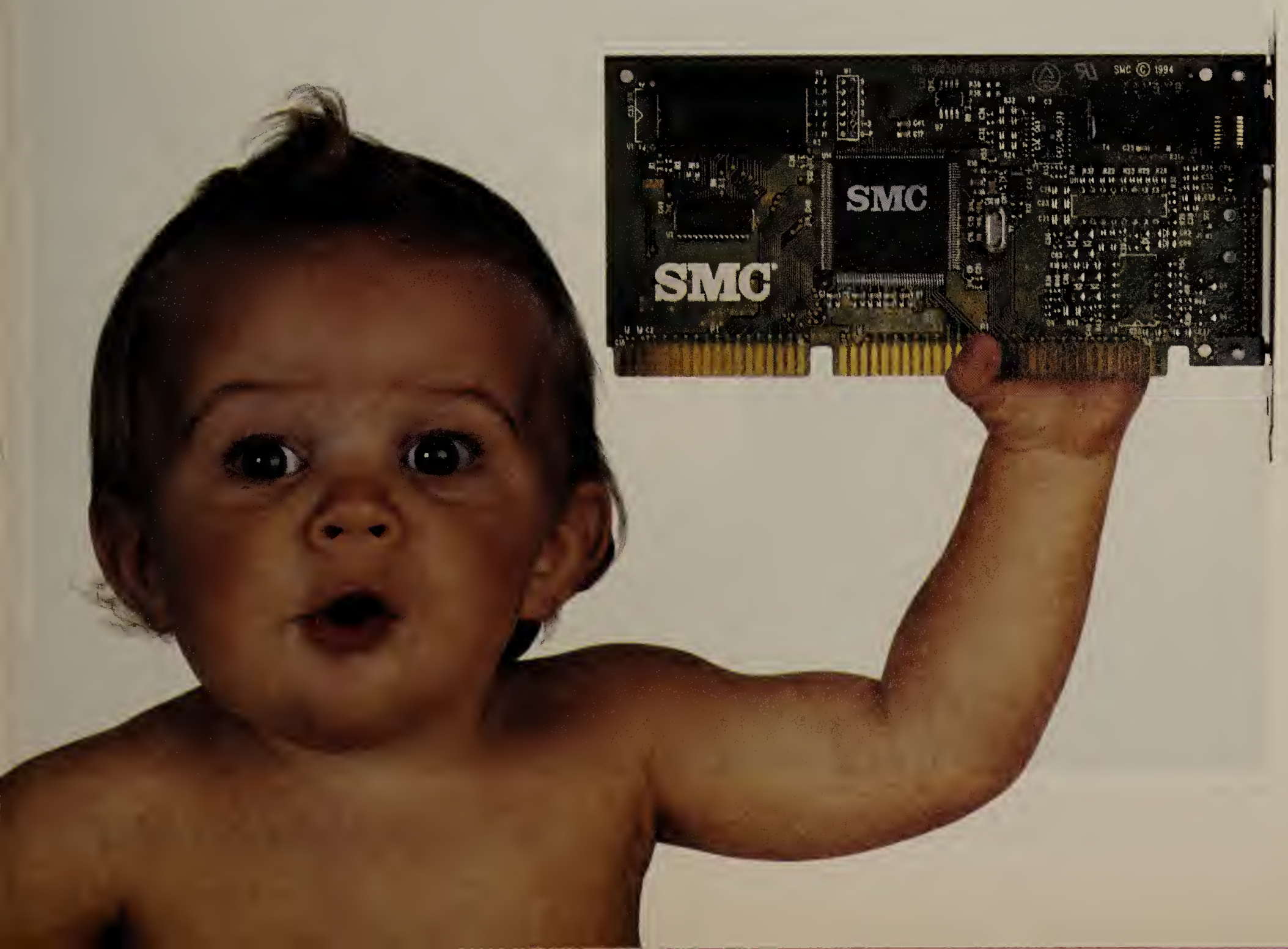

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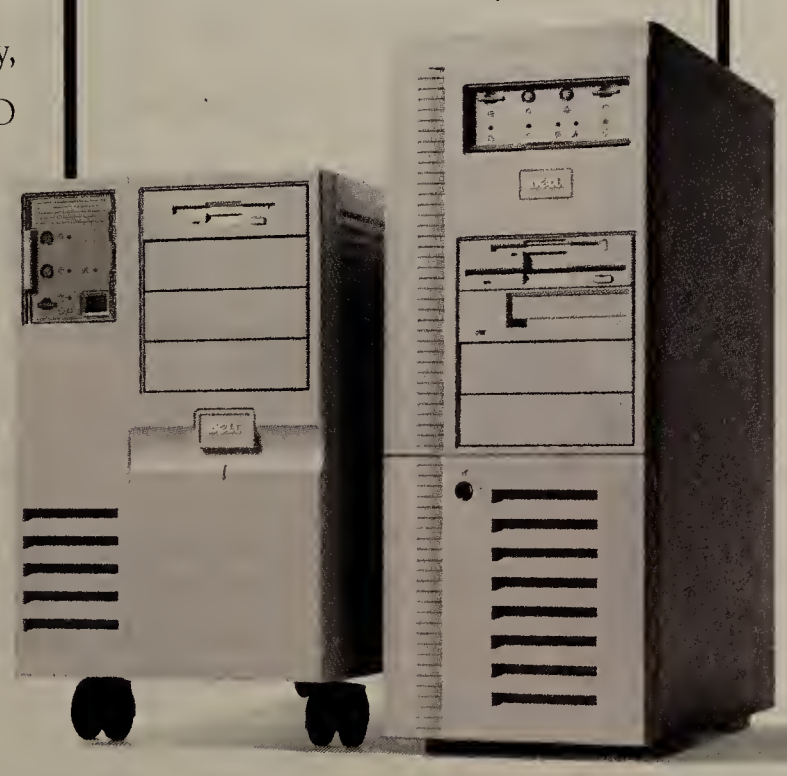

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BRIEFS

Eicon Technology Corp. last week announced a single software package that includes its **3270 and 5250 terminal emulation** products. It is designed to give Microsoft Corp. Windows, Windows NT, DOS and OS/2 client workstations simultaneous access to mainframe, mid-range and Unix host resources.

Universal Access combines Eicon's previously separate Access for Windows, Windows NT, DOS and OS/2, which provide access to a range of IBM and non-IBM hosts. The Windows and OS/2 portions of Universal Access provide as many as 32 simultaneous sessions with a host, and users may cut and paste between sessions.

Universal Access is available this month in 100-user packages priced at $21,875.

Eicon: (514) 631-2592.

OpenVision last week introduced a new version of its storage management software that supports Oracle Corp.'s Oracle7 databases and ease-of-use enhancements.

Version 1.7 of **OpenVNetBackup** includes a feature called Database Extension that makes it possible to back up, archive and defragment live relational Oracle databases across the network. Another feature, called the Hierarchical Storage Management (HSM) Extension, enables the migration of desktop files from local disks to departmental servers while retaining immediate access to those files.

And OpenVision's **Enterprise Extension** links departmental servers with remote servers and centralized storage management applications so users can deploy their mainframe storage resources in addition to their distributed, client/server backup utilities.

OpenVNetBackup 1.7 costs $5,500 per server and $300 per agent. The Database Extension costs $1,000, while the HSM Extension is priced at $20,000 and $2,000 per agent. Enterprise Extension costs $10,000.

OpenVision: (510) 426-6400.

Cisco builds security into router software

BY ELLEN MESSMER

San Jose, Calif.

Cisco Systems, Inc. is teaming with Cylink Corp. to develop router software that will shield data from unauthorized eyes as it transits the public Internet or corporate backbones.

The software module will use public-key encryption technology to scramble and unscramble IP packets between two points.

In addition, it will be able to check data packets to ensure the contents have not been tampered with, as well as authenticate the sender's identity through what's known as a digital signature.

Cisco is believed to be the first router vendor to announce its intent to build public-key security into its entire router line. "There aren't any other router vendors doing this," said Bruce Schneier, president of Chicago-based security consultancy Counterpane Systems.

Minneapolis-based Network Systems Corp. last month introduced what it calls the Security Router for encrypting and decrypting IP packets.

But the product, scheduled to ship in February, is a stand-alone device added to the corporate router network, not software that can be added to existing routers.

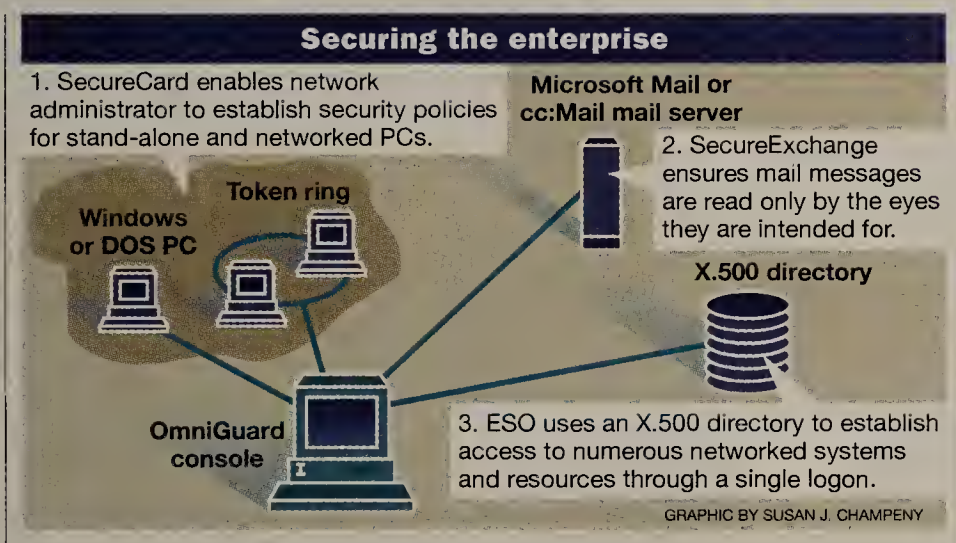
The encryption software for the Cisco Internetwork Operating System, scheduled to ship in mid-1995, is designed to scramble IP packets in two ways, said Matthew Howard, product manager for security at Cisco.

The first involves scrambling the content of IP packets, but not the header. With the other method, both the packet content and the header are scrambled, and the header is replicated. "This method is more secure but adds overhead," Howard noted.

Public-key technology is based on a dual-key system that matches a secret key with a publicly known key in order to encrypt and decrypt data. With public key, the sender's identity and message content can be checked through the "hash" and digital signature.

This technique will be supported transparently in Cisco router networks.

See **Cisco**, *page 20*



Axent acquires Datamedia to fill out security offerings

BY JIM DUFFY

Rockville, Md.

Axent Technologies, Inc., the security software company formed recently by Raxco, Inc., last week said it had acquired Datamedia Corp. of Nashua, N.H., to help fill out its security product portfolio.

Datamedia makes information security software for Microsoft Corp.'s Windows and DOS machines. The firm shipped its first security products in 1992 and has sold more than 50,000 licenses to date.

Datamedia customers include the U.S. Department of the Treasury, the U.S. Navy, the Federal Reserve System and National Semiconductor Corp.

By acquiring Datamedia, Axent fills out the DOS and Windows categories of its OmniGuard security management offering. OmniGuard provides enterprisewide security management, access control, and user administration, identification and authentication, as well as single sign-on, secure messaging and data backup.

Until now, OmniGuard supported only Unix and Digital Equipment Corp. OpenVMS systems.

"Clearly, the Holy Grail in net computing is a unified security model," said Matt Cain, a program director at META Group, Inc. in Westport, Conn. "And no vendor has yet to provide it. Axent, however, is coming closer with the Datamedia acquisition."

Specifically, Axent obtained Datamedia's SecureCard, SecureExchange and Enterprise SignOn (ESO) product lines. SecureCard adds file access controls, user ID and authentication, file encryption, multiple security privilege levels, and audit capabilities to Windows and DOS platforms.

SecureCard allows a network administrator at a central site to coordinate and manage personal computer security across LANs or stand-alone machines from a Windows workstation. SecureCard can protect data transmitted across or stored on Novell, Inc. NetWare, Banyan Systems, Inc. VINES, Microsoft LAN Manager, IBM LAN Server or Digital Pathworks network operating systems.

See **Axent**, *page 20*

SNA INTERNETWORKING

Vendors are pushing DLSw to the desktop

BY MICHAEL COONEY

The battle for control of the corporate backbone is slowly moving to the desktop.

Cisco Systems, Inc., Eicon Technology Corp. and Wall Data, Inc. all recently announced products that let users encapsulate Systems Network Architecture traffic at the desktop using Data Link Switching (DLSw) technology and transport it across TCP/IP nets to hosts across the enterprise.

The vendors say bringing DLSw to the desktop will help users more easily consolidate SNA and TCP/IP nets and provide a less expensive way to access SNA host applications, which could eliminate the need for gateways.

DLSw is IBM-developed technology that lets SNA and Network Basic I/O System traffic flow over TCP/IP backbones. It has been accepted as RFC 1434 by the Internet Engineering Task Force.

Eicon's Maks Wulkan (above) and Cisco's Michael Zadikian

"We are giving users the ability from their SNA-based client workstation to easily and uniformly gain direct access to IBM SNA hosts over a multiprotocol network," said Michael Zadikian, product manager for IBM networking at Cisco.

Cisco's desktop implementation of DLSw, dubbed the Native Client Interface Architecture (NCIA), involves the encapsulation of 3270 datastreams in TCP/IP at the client workstation.

Wall Data will deploy NCIA in its Rumba host emulation software, and other emulation vendors are expected to follow suit next year.

Eicon will address DLSw via a new feature, Desktop DLSw, added to its line of personal computer-to-host emulation products for Windows, Windows NT, DOS and OS/2 (*NW*, Dec. 12, page 1). Desktop DLSw encapsulates 3270 and 5250 data in TCP/IP packets. A router supporting DLSw is required at the data's final destination but not at the local or remote site.

"Doing [DLSw] at the desktop eliminates overhead and reduces the memory and CPU requirements on the router by handling overhead such as IP and [Logical Link Control 2] address resolution and queuing at the desktop," said Maks Wulkan, executive vice president of Eicon. "It also lets users begin to deploy a single protocol across their corporate backbones."

MORE TO COME

"Users are likely to find DLSw as an option in many of their emulation packages next year," said

See **DLSw**, *page 21*

INTERNETWORKING MONITOR

by Dan Minoli

Fibre Channel Standard is no competition for ATM

Recently, I saw a letter to the editor suggesting that the Fibre Channel Standard be covered in *Network World* along with all the stories on ATM, the implication being that Fibre Channel is an ATM alternative.

I agree that all technologies should be appropriately discussed and tracked, and I have written articles about the Fibre Channel Standard. In some highly specific situations, it is in fact possible that this technology is more optimal than ATM. However, in most instances, particularly in enterprise and workgroup networks, ATM is clearly better.

First, I agree that there is too much hype about ATM. For example, two recent trade press articles used the word "nirvana" when describing ATM.

To be sure I understood what they meant, I looked up the exact definition of nirvana: "the state of . . . release from the cycle of reincarnation and attained through the extinction of the self . . . a state in which reunion with the Brahama is attained through the suspension of individual existence."

All of that with ATM? Wow!

The last time I asked my librarian for a literature search, there were approximately 20,000 articles written about ATM in the past few years, and the number has probably grown.

ATM is making great strides as both a local- and wide-area technology. It will support data, video, image, multimedia and, in the campus, voice. The majority of the standards, particularly those in support of enterprise data networks, are complete, and second-generation equipment of all sorts is already on the market.

This is not to imply, however, that ATM is totally ready.

Work on video only recently started; voice remains a problem for the wide area (but not for campuses); network management capabilities and tools need to be developed; interoperability remains to be resolved by way of an agreement on the private network node interface; traffic management remains to be worked out not only in terms of consensus, but also by practically tested equipment; upper-layer capabilities need to be developed; technology costs have to be further brought down. The list goes on.

However, this does not imply that the Fibre Channel Standard is the missing solution. It is by and large a point-to-point technology. And even if switching can be accomplished in principle, there isn't a plethora of such equipment on the horizon.

The Fibre Channel Standard has its roots in channel extension mechanisms for supercomputers and mainframes.

With the fortunes of both these types of computers in question, it's clear the vendors that developed this technology, suffering through the standardization process that lasted almost a decade, are looking for something else to do with it.

Fibre Channel does not have the flexibility to support wide-area, local-area and LAN emulation/interworking requirements. The types of media it works with (for example, coaxial, and single and multimode fiber) are not optimized for massive deployment — that is, at every desk of a white-collar worker.

The data packets being transferred are variable and can be long — up to 2K bytes — which makes switching less expeditious than in ATM where all cells have the same length. The gamut of software and equipment needed — PC network interface cards (NIC), workstation NICs, LAN hubs, hub cards, routers, switches, server NICs, data service units, public switching gear and applications — do not appear to be in the cards. Rather than receiving support from 600 vendors, only a few dozen have expressed any interest, much less produced equipment.

I feel confident about this prediction: The road to broadband, if it occurs in the enterprise network, will be via ATM.

Minoli is a principal consultant at DVI Communications, a full-service consultancy in data, voice and video based in New York. He can be reached at minoli@pipeline.com.

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AVAILABLE FROM TECH DATA AND GBC/VITEK.

Cray eases network administration

BY JIM DUFFY

Annapolis Junction, Md.

Cray Communications, Inc. last week announced a software enhancement for its System Center routers that is designed to ease address administration for small to midsize LAN internetworks.

Called Addressless Routing, the software lets network administrators use routers to interconnect LANs without assigning and keeping track of IP or other network-layer addresses.

"You don't have to hassle with end-station addressing," said Edwin Durham, product marketing manager for Cray.

The network operator's only burden with Addressless Routing is numbering each LAN port on a Cray System Center router with a segment number from 1 to 255. Using the Intermediate System-to-Intermediate System (IS-IS) routing protocol, the routers then locate end stations and assign them addresses based on the segment number where they reside and their media access control (MAC)-layer address.

MAC-layer addresses are factory-assigned by suppliers of network interface cards, personal computers and workstations.

With traditional routing, administrators have to assign each end station with an IP and subnet address and map them to router ports so packets can be steered to the appropriate router for the target node.

System Center routers will also locate each other and keep track of the network topology via the IS-IS protocol. IS-IS is based on a link-state routing algorithm that allows all routers to share routing information whenever there is a change, whether they are adjacent to each other or not.

By combining segment numbering, automatic route determination and compilation of MAC addresses, the need to manually reassign end-station addresses after every move, add or change is eliminated, Cray said. And Addressless Routing also includes the scalability, efficient WAN link use and bandwidth management of routing, including automatic updating of new network configurations, rapid self-healing, load balancing and routing around transmission problems, the company said.

"This seems to combine some of the advantages of 3Com's Boundary Routing concept, which is really just a bridge, with the ability to maintain some of the advantages of using routing protocols," said Lee Doyle, director of LAN and data communications research at International Data Corp. in Framingham, Mass.

Addressless Routing will be offered as a standard feature of System Center routing software at no additional charge to new or existing customers. It is available now.

©Cray: (301) 317-7710.

Cray offers new alternative

	Bridging	Routing	Addressless Routing
Protocol independence	Yes	No	Yes
Setup	Easy	Complex	Easy
Operation	Easy	Complex	Easy
Addressless operation	Yes	No	Yes
Network size	Small	Large	Medium
WAN efficiency	Poor	Excellent	Excellent
Self-healing	Slow	Fast	Fast

SOURCE: CRAY, ANNAPOLIS JUNCTION, MD.

Axent

Continued from page 17

SecureExchange adds security to popular electronic messaging systems such as Microsoft Mail and Lotus Development Corp.'s cc:Mail. It uses asymmetric key encryption to ensure that mail messages or any attached files sent over public or private networks are read only by their intended audience.

SecureExchange also uses digital signature technology to authenticate the source of a message and to guarantee that the message has not been modified or changed en route.

ESO is a networkwide identification and authentication product that enables users to log on to the network and gain access to LAN servers, Unix machines, and mid-range and mainframe systems without having to log on to each individually. ESO allows network administrators to set up user profile information, including logon IDs, passwords, system resources and applications, in an X.500 directory.

When users are added to the directory, ESO propagates their access rights throughout the network.

SecureCard, SecureExchange and ESO are available now through Axent distribution channels. Pricing was not disclosed.

✆Axent: (301) 258-2620.

Cisco

Continued from page 17

LATTIN

The particular algorithm Cisco routers will use is based on the federal government's Digital Signature Standard (DSS) and the Diffie-Hellmann method of key exchange. For encryption, the routers will use the Digital Encryption Standard as well as proprietary Cylink algorithms.

Cisco will be drawing upon the security expertise of Cylink to create a network management station for electronic distribution of the encryption keys to the routers. It also will support diagnostics and collection of statistics.

William Lattin, vice president of Cylink, said the firm is developing a Unix platform based on Hewlett-Packard Co.'s HP OpenView that will house the public-key certificates stipulating levels of security clearance that firms may want to apply.

"This is the first time we've integrated our security technology into a router product," Lattin said. "But if other vendors such as Wellfleet wanted to use this, it would work with their products, too."

Fed. agency gets the point: Fix the security problems

BY ELLEN MESSMER

Washington, D.C.

Two years ago, Resolution Trust Corp. (RTC), a division of the Department of the Treasury that was set up to handle the savings and loan crisis of the late 1980s, itself came under fire for poor information security practices.

The General Accounting Office (GAO), the government's watchdog agency, issued a scathing report that points out network security breaches, inadequate mainframe access controls and rampant computer virus problems at the agency.

The report spurred RTC to implement uniform security practices for access to its three mainframes and the 15,000-user Banyan Systems, Inc. VINES-based LAN internet that spans its five regional offices.

Cleaning up its security mess...

Resolution Trust Corp. last year

- Set up a master access control database of mainframe and LAN user IDs.
- Established written security procedures.
- Deployed antivirus products on PCs.
- Mandated security training for LAN users and managers.

A GAO report critical of RTC security policies prompted improvements at the agency, which was set up to resolve the savings and loan mess of the 1980s.

GRAPHIC BY TERRI MITCHELL

And RTC security officers credit the GAO report with giving them the influence to make needed changes, such as setting up a master access control database listing user IDs and authorized access rights.

"Back in 1992, access control was a disaster," said Angel Rivera, security administrator at RTC. "The GAO told the world how bad our security was, and it gave us the ammunition to improve things."

For example, the security division gained the manpower and clout necessary to motivate LAN systems administrators to carry out security policies.

One policy — having each LAN user sign an access control form before obtaining LAN access — established a record of whether the individual had access just to the local LAN server or to the wide-area server, as well.

"Back in '92, every department was doing its own thing," Rivera said. "Now we have a standard procedure."

Mainframe access information is now stored in a master access control database. To weed out IDs that may not have been deactivated since their owners left RTC, the master list is regularly compared to the master payroll list and the LAN ID lists.

Slaying the computer virus dragon at RTC was another problem for the security staff. Rivera, an expert in virus control, was hired by RTC two years ago specifically for the job.

"The source of the virus attacks was a LAN administrator who logged in from an infected PC," noted Rivera. RTC now uses antivirus software once a week to check individual disk drives.

"Virus attacks are extremely expensive because people overreact to them, and administrators disconnect entire systems," Rivera said. "A boot sector infection won't affect your network, except perhaps your Novell network server. Your data is not at risk, only your executable files.

"Ask yourself — can you wait until the end of the day and go in and clean it up? The chances are, you can," Rivera said. "There are few viruses that will trash your data or your network."

DLSw

Continued from page 17

Frank Dzubeck, president of the Communications Network Architects, Inc. consultancy in Washington, D.C.

Louise Herndon Wells, director of SNA internetworking at the Internet Technical Institute in Milpitas, Calif., and chair of the DLSw Special Interest Group working on developing the DLSw specifications, said her group could address the issue.

"It's never been brought up before, but if the DLSw group wanted it, we could define the desktop piece," Wells said, noting it could be included in the next version of DLSw, which is expected late next year.

Users see pros and cons to the idea.

"If the desktop DLSw could help take some of the overhead off our existing routers, it would be a help," said Greg Veltri, director of network services with AcGo Services Corp. in Englewood, Colo.

"This solution sounds like it would be better for large users just now deploying DLSw routers," Veltri said.

"But most of our DLSw technology has already been de-ployed, and I am not sure of the benefit of redoing it at the desktop level," he said.

Others said doing TCP/IP encapsulation on the PC could take up an inordinate amount of CPU cycles and require more memory than most PCs can handle. But Wulkan said DLSw at the desktop offers some key advantages.

For one, he said it is more robust than the traditional tn3270 emulation techniques that let 3270 devices gain access to SNA host resources over TCP/IP nets. With Desktop DLSw, for example, users will be able to tailor and prioritize the amount of bandwidth SNA applications need.

And, unlike Cisco's implementation, Wulkan said Eicon's product will work with any DLSw-compliant router.

REMOTE SNA

Desktop DLSw vendors said their software also would be beneficial to remote SNA users needing dial access to SNA applications on a host.

"SNA dial access is weak, and with NCIA, users can deploy the Point-to-Point Protocol and other industry-standard serial protocols for remote dial access," Zadikian said.

✆Cisco: (800)553-6387; Eicon: (514)631-2592; Wall Data: (206) 814-9255.

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SMS	Starts at $649	January
NMC 4000	Starts at $6,000	January

GRAPHIC BY TERRI MITCHELL

Sequent to roll out system mgmt. software offerings

BY MARGARET DORNBUSCH

Beaverton, Ore.

Sequent Computer Systems, Inc. last week announced three additions to its ControlPoint suite of system management products, including a new SNMP product for managing its Unix and Windows NT servers.

In addition to ptx/Agent, the new Simple Network Management Protocol software, Sequent is adding Network Managers, Inc.'s NMC 4000 SNMP management system and Microsoft Corp.'s Systems Management Server (SMS) desktop management software to its ControlPoint collection.

The ptx/Agent software is a superagent that resides on networked servers and gathers information from customized subagents designed by users, said Bill Hughes, Sequent's line of business manager.

The subagents can provide data about databases and other applications. The superagent collects the subagent information and feeds it to an SNMP-enabled management console such as NMC 4000,

See **Sequent,** *page 24*

Novell technology to make Internet access intuitive

BY KEVIN FOGARTY

Novell, Inc. is trying to make life simpler for NetWare users by building a graphical client for accessing information on the corporate network and the Internet.

The effort centers around technology, code-named Corsair, that Novell Chairman and Chief Executive Officer Robert Frankenberg demonstrated at the Comdex/Fall '94 trade show recently.

PRIMER

Corsair, which Novell will start rolling out next year, consists of a new version of the NetWare client, code-named Ferret, and a server-based NetWare Loadable Module called InfoServer.

Ferret uses an office building metaphor to represent a user's LAN and WAN environment. It is a full-function World-Wide Web browser that links users to internal and external networks by navigating among Web pages.

The InfoServer includes an IP/IPX gateway to link users running IPX on the LAN to Internet and Web services. Ferret can also operate in pure IP LANs.

GETTING AROUND WITH FERRET

The local net is represented in Ferret as an almost-photo-quality image of an office, including a desk and filing cabinet. The rest of the network is represented as other rooms and floors in the building. External networks such as on-line services or the Internet are represented using the image of a city outside the window of the building (see photos, this page).

To get to files on their local net, users click on the filing cabinet; to get to files on other servers, users click on the door to the office. Ferret transports them down the "hall" to an elevator with buttons representing other servers on the network.

With Ferret, users see their local networks as an office, clicking on file cabinets to access files. Users "jump out" the window to reach a graphical representation of the Internet or an on-line service.

Novell has designed Corsair so that server names are intuitive, eschewing network addresses or other arcana, said Ransom Love, marketing manager for Corsair technologies at Novell. The group of servers run by the human resources department, for example, would be represented by a single button marked Human Resources.

All of the Web pages in a Corsair system can be built or customized by users, Love said. Users, for example, can scan in actual photos of their offices and assign hot buttons to certain icons to customize their own workspace, he said.

To get out to the Internet, users "jump out" the window by clicking on the window of their home office. "Outside" is the image of a city, which actually is the graphic representation of all the services and sites available from an Internet service provider. Users just click on the information source they need once outside, Love said.

The system is designed to be secure, Love said. Users will be able to place purchase orders and be billed through their service provider, for example, rather than having to put a credit card or other authorization up on a public network, he said.

See **Novell,** *page 25*

APPLE CONNECTIVITY

InterCon enhances 'Net access from Macs

BY PEGGY WATT

Herndon, Va.

InterCon Systems Corp. this week will release an enhanced version of its LAN-based TCP/Connect II communications package for the Macintosh that comes with complete Internet navigation tools.

TCP/Connect II 2.1 provides an integrated World-Wide Web browser, support for the Socks firewall service and an easier, point-and-click interface to the Internet, said Amyn Meruani, senior product manager at InterCon.

Version 2.1 builds on the previous version, released in August, which added a Network News Reader and Gopher client. It also added a Point-to-Point Protocol, Serial Line Internet Protocol (SLIP) and IP modem connection to the Internet through a variety of LANs supporting TCP/IP.

TCP/Connect II 2.1 for the Macintosh is designed to let users call and navigate the Internet through the familiar Macintosh point-and-click interface, Meruani said.

Among other things, the software can be used to send electronic mail. It supports the Multi-purpose Internet Mail Extensions specification for exchanging E-mail that includes multimedia information such as video or audio.

The Socks firewall support for the LAN complies with the Internet Engineering Task Force draft protocol. Socks lets LAN administrators set rules for each user's access to the Internet.

MERUANI

The updated software installs more easily on a LAN because it takes configuration information from the Macintosh's TCP files. The program, which runs native on the PowerMac and is System 7.5-compatible, also supports terminal emulations for Digital Equipment Corp. terminals (VT-100), and IBM 3270 and Tektronix, Inc. systems.

TCP/Connect II 2.1 for the Macintosh is available in two versions: one for LANs at $495 and another for remote desktop dial-up at $195.

InterCon is also planning an update to the Windows version of TCP/Connect II, Meruani said.

✆InterCon: (703) 709-5500.

BRIEFS

Bay Networks, Inc. and **Interphase Corp.** last week announced that the companies will jointly offer the first **combined Ethernet and Asynchronous Transfer Mode switching** solution compatible with the ATM Forum's LAN Emulation specification.

The companies will marry Bay's LattisCell ATM switches and EtherCell Ethernet-to-ATM switches with Interphase's ATM adapters for delivery in the first quarter of 1995. Pricing has not yet been set.

Cayman Systems, Inc., a remote access and internetworking vendor in Woburn, Mass., announced last week a reseller agreement with **Control Data Systems, Inc.,** an electronic messaging company in Arden Hills, Minn. Control Data will resell Cayman's GatorAccess, GatorRoute iR and GatorStar iHR internetworking products as part of its corporate electronic mail system package. Control Data will offer the Cayman **remote access server and integrated hub/router** products to connect E-mail workgroups to corporate Ethernets and provide dial-in support for users in branch offices.

Asante Technologies, Inc., in San Jose, Calif., will announce today a new 24-port hub as part of its line of unmanaged **Ethernet hubs.** The hub, dubbed the 10THub/24, supports RJ-45, attachment unit interface (AUI) and BNC ports. The hub is available now for $749.

Asante: (800) 662-9686.

Legato Systems, Inc. today will announce a Windows NT client for its **NetWorker storage management** software platform. The NetWorker Client for Windows NT provides data protection for Windows NT workstations and servers connected to NetWorker over a TCP/IP network. NetWorker already supports Unix-based servers and those running Novell, Inc. NetWare. The new software is available now and costs $750 through March 31.

Legato: (415) 812-6000.

Windows Connectivity Forum

Windows NT 3.5: a 1994 success story

While everyone is anticipating the delivery of Windows 95 next year, 1994 will be remembered as the year users finally got a taste of a Microsoft Corp.-developed 32-bit Windows operating system — Windows NT 3.5.

If you haven't had a chance to work with Windows NT 3.5 Workstation edition, you might want to get that checkbook out for an upgrade. WINCON Forum members say it is worth it.

By Joel Diamond
Technical director
WUGNET
Windows User Group Network
76702.1023@CompuServe.com

From what we hear, demand for Windows NT 3.5 has far exceeded initial projections and generated somewhat of an internal conflict in Microsoft's personal systems software management team. Such demand was unexpected by Microsoft, which consciously priced Windows NT 3.5 Workstation at $300 and maintained a high upgrade price path for existing Windows for Workgroups 3.11 users.

Even some national resellers, including The Corner Store, a Connecticut-based company that previously specialized in reselling OS/2 and third-party OS/2 applications, have switched over to selling Windows NT exclusively based on the demand from major corporate customers.

Microsoft Solution Providers also are finding it difficult to maintain inventories of Windows NT 3.5 Workstation. So today, Windows NT 3.5 remains backordered, and buyers like me will need to wait for Windows 95 in order to continue to progress through beta for a second-quarter 1995 release.

Where does this leave Windows NT 3.5 Workstation users on WINCON? From initial reports, we are tracking customer satisfaction close to the 90% level (based on the number of messages posted on the WINUSER and WINCON forums).

Despite the rave reviews, there are still a number of unanswered questions for Windows NT 3.5 Workstation users:

- Will Microsoft executives, armed with such feedback, turn around and announce a $50 upgrade to Windows NT 3.5 to Windows for Workgroups 3.11 users as a strategy to blunt OS/2 mega-marketing?
- Will Microsoft ever release the so-called Windows 95 user interface system libraries for Windows NT 3.5, letting developers release Windows NT-specific versions of their 32-bit applications with Windows 95 drag-and-drop and other user interface-specific features?
- Will Microsoft commit to 32-bit extensions to Windows NT 3.5 for Windows 95-specific application program interfaces (API), such as the Messaging API and Telephony API?
- When will Microsoft release a full 32-bit edition of its Microsoft Mail client?

HAPPY HOLIDAYS

The WUGNET on-line staff has some holiday gift-giving recommendations for *Network World* readers. The following list of software includes some of our favorite gizmos — both shareware and public domain — you should give to your favorite LAN administrator for the holidays.

Download the following from WINCON Library 23 and copy them to a few floppies. Give them away to those who make sure your Windows networks and connections are always running. They deserve it.

- **Netris 1.1 for Windows (NETRIS.ZIP)** — Shareware that comes with an exceptional array of multimedia options for sound and graphics.

If you have a soundboard and a video configuration supporting 256 colors, download the associated NETRGX.ZIP and NETRFX.ZIP files.

- **JokeBag (JOKBAG.ZIP)** — A screen saver that, when invoked by Windows, generates humorous quotations, phrases, one-liners and jokes. Shareware by Brighton Beach Software, it comes with a database of 7,000 humorous jokes and quotations.
- **Animouse 4.0 (ANIMS4.ZIP)** — A utility that animates Windows mouse pointers. Great for presentations, this utility is packed with dozens of creative cursor ideas, including cursors for portables and small screens.
- **Zodiac Screen Saver (ZODIAC.ZIP)** — A screen saver using full-color 3-D illusions of the 12 zodiac symbols.

New tape technology promises to boost minicartridge capacity

BY MARGARET DORNBUSCH

San Jose, Calif.

A new data storage technology proposed last week by five storage companies promises to double existing 3.5-inch minicartridge capacities, increasing the format's attractiveness as a backup solution for departmental LANs and remote office nets.

The technology, dubbed Travan, is being endorsed by 3M Co., Sony Corp., Hewlett-Packard Co.'s Colorado Memory Systems Division and others (see graphic).

The group presented the proposal to Quarter-Inch Cartridge Drive Standards, Inc., an industry forum that oversees quarter-inch cartridge (QIC) technical standards.

Travan's QIC tape backup technology is needed to help tape keep up with ever-expanding hard-disk drive capacities, said Michael Stevens, business development director at 3M's Data Storage Tape Technology Division in St. Paul, Minn.

Tracking Travan

Initial supporters

- 3M
- Sony Corp.
- HP's Colorado Memory Systems Division
- Conner Peripherals
- Iomega

Benefits

- Cartridges will contain as much as 750 feet of recording media, instead of the current 400 feet.
- Doubles uncompressed tape storage capacity.
- New drives will be able to use both existing cartridges as well as high-capacity cartridges.

GRAPHIC BY TERRI MITCHELL

According to a study this year by market research firm Dataquest, Inc., the average 3.5-inch hard-disk drive capacity is now about 780M bytes and will increase to about 1G byte in 1995.

"Tape technology is dropping behind that curve, and we want to maintain that one-to-one backup capacity of tape to disk for serious backup applications," Stevens said.

The new cartridge will contain nearly twice the tape as existing minicartridges and will store as much as twice the data in native, uncompressed mode.

"Travan elevates [QIC] to a new level of competitiveness in the overall tape drive market," said Fara Yale, a principle analyst with Dataquest in San Jose, Calif.

The majority of the QIC units back up stand-alone personal computers, but about 10% are used to back up peer-to-peer LANs, Yale said.

SUITABLE USE

Travan's dramatic increase in capacity, which approaches that of digital audiotape drives, will make QIC more attractive to net managers for smaller LANs and remote offices, said Bob Abraham, vice president of Freeman Associates, a consultancy in Santa Barbara, Calif. Right now, QIC drives are the lowest capacity and lowest cost of all backup technology, he added.

Since the new drives will be able to read existing quarter-inch cartridge tapes, users will not have to throw their old backups out the window.

The first Travan products — all floppy drive interface formats — are expected to roll out in the first half of 1995.

NetWorth moves on fast E-net devices

BY MARGARET DORNBUSCH

Irving, Texas

NetWorth, Inc. has unloaded a round of fast Ethernet products, including both stand-alone and stackable 100M bit/sec hubs.

The Series 1000 Micro100 Hub is a 100Base-TX repeater that allows users to upgrade to fast Ethernet using existing 10Base-T wiring and fast Ethernet-compatible adapters. These adapters include NetWorth's SwiftNIC 10/100TX Extended Industry Standard Architecture (EISA) and Peripheral Component Interconnect (PCI) server/workstation cards.

The Micro100 is an unmanaged, stand-alone hub that supports eight 100Base-TX Class II ports, including an uplink port that can be used to connect to additional Micro100 hubs.

The hub is shipping now and costs $1,795.

Other fast Ethernet products due from NetWorth include:

- A FastStack stackable and segmentable 100Base-TX/T4 repeater, which will be available during the second quarter of 1995.
- A 10/100 PowerPipes II Switch, which will provide six 10Base-T connections and one 100Base-TX connection, and is due in the third quarter of 1995.
- SwiftNIC 10/100TX ISA adapters, which are due in the third quarter 1995.
- SwiftNIC 10/100T4 EISA, PCI and ISA adapters, which are also due in the third quarter of 1995.

✆NetWorth: (214) 929-1700.

Sequent

Continued from page 23

IBM's NetView or Hewlett-Packard Co.'s OpenView.

The NMC 4000 network management system, which Sequent has licensed from Network Managers, sits on a Sequent server running Windows NT. The system can manage anything that speaks SNMP, including Unix servers, workstations, hubs and routers, Hughes said.

"We think Windows NT is going to be the future console for doing single-point management."

The management console's graphical user interface-based application will work in conjunction with other management applications, including programs that handle network mapping, real-time statistics, historical performance and configuration.

Sequent chose to license NMC 4000 because of the product's strong ties with Microsoft's SMS, a set of Windows NT server-based tools that allow remote system administration of computers on a network, Hughes said.

"We think Windows NT is going to be the future console for doing single-point management," he said.

SMS, which can reside on Sequent NT servers, allows net managers to conduct hardware and software inventory and software distribution, as well as software and hardware troubleshooting.

With SMS, network administrators can manage LANs featuring Novell, Inc. or LAN Manager servers using DOS, Windows, Windows NT, Macintosh or OS/2 clients.

✆Sequent: (503) 626-5700.

NET RESULTS

by Mark Gibbs

Computers and Santa

Bah humbug.

I started writing this column on an airplane last week with the idea of producing a lighthearted parody on some Christmas poem.

I opened my PC on what the airline laughingly called a table in the torture chamber euphemistically called a seat. I was typing for 45 minutes when — without warning — the guy in front of me, who must have weighed 450 pounds or better, decided to recline his chair.

When the back of his chair came down smartly on the top of my PC, the seatback cracked the screen as it was driven through the keyboard. Bah humbug.

Thus it was that my first attempt to write a Christmas column came to an end. When I got back to the office, I moved to my networked PC. I fired it up, connected to the network and . . . damn. Under Windows, none of the drive mappings worked and all of the printers were unavailable to me.

Hummm. Ah! Obvious. I did a review of Preferred Systems' DS Standard for *Network World* recently and reconfigured our network to hell and beyond. Another 15 minutes lost.

OK, back to it. Twenty minutes later, my angelic 21-month-old boy, Keihan, came visiting. "Daddy! Apple juicy!" he said, as he poured the apple juicy into an open drivey bay.

An hour and a half later, after a futile attempt to clean the machine, I started all over again. I gave my new Apple Newton a try. That old favorite, "We Wish You a Merry Christmas" was rendered as:

We wagon a nearly Climbing,
We Nigeria a worry Currency,
We crayon a Mary Captured
And a Creamy Kenya.

This was obviously not a solution either. Humbug.

So computers are hell. But if you think you have it hard, imagine what it is like being Santa.

The Gibbs & Co. Think Tank (tm) did just that, and after massive data collection efforts (filching commentary from authors unknown on the Internet), here are our expert conclusions:

1. If Santa was to supply presents to all of the children in the world — excluding the Muslims, Hindus, Buddists and so on that do not believe in him — that gives him about 378 million kids to visit. At an average of 3.5 children per household, that results in 91.8 million homes.

2. Due to the international date line and time zones, St. Nick has 31 hours in which to work his magic. Given 91.8 million households, that amounts to 822.6 visits per second.

3. Given an even distribution of households around the earth (quite unrealistic), that comes out to about 0.78 miles per household and a total of 75.5 million miles. It would also give Santa a *Guinness Book of World Records* entry for frequent-flyer miles.

4. We figure 91.8 million miles in 31 hours works out to 650 miles per second or 3,000 times the speed of sound.

5. At, say, two pounds per present, the sled's load would be 378,000 tons. If an average reindeer can pull 300 pounds and we'll assume Santa's are capable of 10 times that, it is going to require 252,000 of them on Christmas Eve.

6. As Santa is traveling at 650 miles per second, the lead reindeer pair will burst into flames more-or-less instantaneously. The next pair will explode fractionally after that and so on, 126,000 times. Santa will experience each immolation as a sonic boom renders him deaf, if not pulverized.

7. But as Santa will, by tradition, drink a sherry and eat a mince pie at each house he visits, he will be too blotto and bloated to notic.

Makes you feel glad you only have to deal with computers.

Have a good one.

Gibbs is a consultant and writer in Ventura, Calif. He can be reached at (800) 622-1108, Ext. 504, or on the Internet at mgibbs@rain.org.

Novell

Continued from page 23

Ferret also will support the RSA Data Security, Inc. public/private key authentication in NetWare 4.X and will offer optional data encryption, Love said.

Ferret's easy-access reach is limited to service providers using the Corsair technology, such as AT&T, which provides NetWare Connect Services in conjunction with Novell. Ferret will act as an ordinary Web browser over other services, Love said.

Ferret's easy-access reach is limited to service providers using the Corsair technology, such as AT&T.

Novell has also integrated its Corsair client software with NetWare 4.X's NetWare Directory Services (NDS) to give users a single logon to Ferret anywhere in the network. The individual preferences and customizations users create for their Ferret interfaces will be stored in NDS, as well, according to Love.

Ferret will be further integrated with Novell's PerfectOffice suite of desktop and groupware applications in an offering called InfoWise, Love said. InfoWise will allow users to route electronic forms from their desktops across the Internet.

Comments?

See "How to reach us" on the back page.

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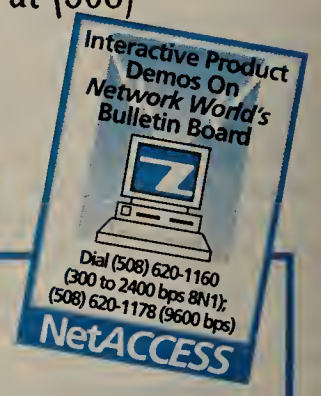

Featured This Week on NetACCESS

New products featured in blue.

ABSTRACTION SOFTWARE
Network & Workflow Modeling/Simultion.

BARANOFF SOFTWARE
MailCheck Demo. A multi-vendor E-Mail management system, for monitoring all mail connections.

BELLCORE
Harness ISDN's Voice/Data Capabilities.

COMMUNICATIONS DEVICES
Network Windows Demo. Requires a MS-DOS PC with 640k and color monitor.

COOPER AND ASSOCIATES
Teletutor Demo. Demonstration on Frame Relay applications and technology. Fixed disk and VGA req.

DATAPROBE
Annunciator Demo. Communicating Annunciators monitor and report remote and local network alarm events.

DYNATECH
Enterprise System. Patch, switch and monitor remote data sizes. Requires Windows.

EMERGING TECHNOLOGIES
CD-ROM Demo. Network information CD-ROMs.

EXPRESS SYSTEMS, INC.
Express Meter Working Model.

FAULKNER
CD-ROM Product Info. Describes MicroData, Communications and Dataworld Infodisks.

IBM
OS/2 2.1 Demo. Take the "Tour of OS/2". Learn about LAN Server 3.0 and OS/2 compatible hardware and software.

KALPANA
Ethernet Switching Interactive Demo. Increase throughput of Ethernet networks using fast packet and circuit switching technologies.

MICROSOFT
1. Windows NT Server.
2. Windows NT Workstation.

MOTOROLA
Embarc Demo. Embarc (SM) allows users to send letters, memos, database updates and more to MAC and DOS based portable computers in over 170 cities.

NATIONAL COMPUTER SECURITY ASSOCIATION
Security Database. Computer Security Resource Database.

NETWORK DIMENSIONS
1.Grafnet Plus Demo. Provides visual presentations of WANs on geographical maps of the world.

2.GrafBASE Demo. A graphical database for managing and presenting LAN and MAN configurations.

NORTHERN TELECOM
VISIT. Multimedia Video Conferencing.

ORNETIX
SerView Demo. Share resources, share access to CD-ROM drives and enable peer-to-peer communication with SerView.

RACAL-DATACOM
Racal Management System.

RANDOMEX, INC.
Information on Data Service Recovery.

RECOR
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ComManager. A computer-telephony integration PC software program that increases productivity.

SOURCE-COMM CORP.
Client Server Demo. Dial into Source-Comm's ANS/1010 Server and emulate 5250 & 3270 for remote access to IBM mainframe and AS/400 hosts.

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TRAX SOFTWORKS, INC.
Team Talk. A discussion application that facilitates communication among group members.

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NETWORK WORLD

BRIEFS

The **Federal Communications Commission rejected rates** filed by five regional Bell holding companies and GTE Telephone Operations for **virtual collocation** of switching equipment in their central offices. Competitive access providers (CAP) had said the proposed rates were too high to allow them to economically offer many switched services to users (*NW*, Oct. 24, page 31).

The FCC had ordered virtual collocation — under which RBHCs and GTE dedicate some of their own switching equipment to CAP use but do not actually allow CAP equipment and personnel into their COs — after courts struck down a physical collocation mandate. NYNEX Corp. and Pacific Bell are not affected by the FCC action since they voluntarily offer physical collocation.

Sprint Corp. and **Bell Atlantic Mobile** have announced that customers that use both companies for **cellular calling** can consolidate their bills into one. Bell Atlantic Mobile will be the single point of contact for these customers. Sprint officials noted that some customers may not wish to do this if their separate cellular long-distance costs count toward an overall long-distance discount with Sprint.

AT&T has introduced a device that enables telecommuters to use the features of a Definity private branch exchange. The **Telecommuter Module** forwards calls and extends features of the PBX — such as extension dialing, voice mail, conferencing and transfer — to any telephone selected by the user.

According to AT&T, the module can save money by allowing remote workers to place calls through the PBX using company-negotiated discount rates, although the module supports only one user at a time and costs $1,095. The product is expected to be available at the end of the month.

AT&T: (800) 682-1528.

3Com, PacBell turn VARs loose in services arena

BY DAVID ROHDE

Santa Clara, Calif.

Network administrators soon may find that the value-added resellers (VAR) they rely on for data communications equipment also can help them select and install the advanced telephone company services.

That's the hope of 3Com Corp. and Pacific Bell as they prepare to announce next month that selected 3Com VARs will be authorized to sell Pacific Bell offerings, such as ISDN and frame relay lines.

Such an arrangement would reverse the more typical setup under which a local telephone company or its agent sells selected vendors' voice and data equipment.

It will benefit users by letting the computer VARs most knowledgeable about enterprise networking offer a complete solution without referring phone problems elsewhere, said Berge Ayvazian, senior vice president at The Yankee Group in Boston.

New channels for Bells

Number of 3Com VARs that potentially will be able to sell carrier services.

Coverage	Direct VARs	Indirect VARs
U.S.	110	5,000-10,000
California	30	500-1,000

Direct VARs receive training on the full 3Com product line and serve regional markets. Indirect VARs tend to be local and have training on individual products.

GRAPHIC BY SUSAN J. CHAMPENY

By contrast, most telephone VARs — the so-called interconnects that primarily sell private branch exchange systems — are not trained to handle data network installations, he said.

"The VARs who previously had no dealings with the RBOCs can now go to the RBOC," said Larry Roberts, 3Com's vice president of telephone company programs, who is hoping to negotiate similar arrangements with other Bell operating companies.

The 3Com-Pacific Bell deal is not unique, said Ayvazian, citing as an example a deal under which Racal-Milgo sold services for MCI Communications Corp. "But most of the time, it's not been a vendor who has a strong position in the market," he added. "In this case, 3Com has a lot of momentum in the remote access market."

Available products under the program will include 3Com's NetBuilder line, including hubs, remote

See VARs, *page 28*

Time is running out for PBX users

BY TIM GREENE

Users who have put off upgrades that enable their private branch exchanges to recognize new area codes are about to run out of time.

New North American area codes — the first with a middle digit other than 0 or 1 — will be phased in starting Jan. 7. If users who have not upgraded place calls to some parts of Chicago on that date, the calls will not get past their in-house private branch exchange. Instead, users will get a voice message saying they are dialing an invalid or nonworking number.

If they continue to delay, those users will eventually lose the ability to call western Washington and southern Alabama, then parts of Houston, most of Arizona and even Bermuda as those locales and others adopt new area codes during the next year (see graphic).

The change has been scheduled for years, but about half of the PBX users who will be affected still haven't upgraded, vendors said.

"The human tendency to procrastinate has slowed things," said John Oliphant, a product manager for Siemens Rolm Communications, Inc. It even offered free software to up-grade its customers' systems during 1993, but only about 45% took Siemens Rolm up on it.

Those who did accept still had to pay a reconfiguration charge of roughly $2,000 plus the cost of any new hardware that older systems required.

AT&T ran into similar problems. Options for upgrading its PBXs include software changes that cost $1,000 to $6,000 per system, or buying entirely new systems, according to Edward Dyl, AT&T's project manager for the North American Numbering Plan. About half the customers that need upgrades are choosing software updates, and half are buying new equipment, he said.

Roughly one-third of AT&T's PBX customers did not need to upgrade because they own Definity G3 or G2.2 platforms, which are not only compatible with the new North American system, but will work with the planned numbering system for Europe, Dyl said.

Likewise, users of NEC America, Inc. PBXs also did not have to reconfigure them; NEC has been building PBXs to accept the new area codes since 1983, said Tony Curry, who is monitoring the changeover for NEC.

Software upgrades take an hour or so once the PBX company has a service person on-site. The problem now is scheduling; PBX vendors have not added staff to accommodate the expected increase in demand.

The upgrades are needed because North America has more phone numbers than can be accommodated by traditional area codes — three digits with the middle digit being 0 or 1.

Primarily because of a boom in requests for wireless services, Chicago has to add a new area code for the second time in five years. The new code — 630 — will overlay the existing 312 and 708 areas, said Jerry Waller, a numbers planner for Ameritech Corp., the major carrier in the Chicago area.

Similar demand has resulted in an overlay area for West Los Angeles, which will get the 562 area code.

New codes cometh

Location	Date	Code
Western Los Angeles	1Q 1995	562
Chicago	Jan. 7	312
Southern Alabama	Jan. 15	334
Western Washington	Jan. 15	360
Houston	March 1	281
Arizona (except Phoenix area)	March 19	520
West of Denver	April 2	970
Southwestern Florida	May 28	941
Northwestern Virginia	July 15	540
Eastern Tennessee	Sept. 11	423
Bermuda	Oct. 1	441
Atlanta	4Q 1995	770
Connecticut	October 1996	803
Southeastern Florida	Not available	954

To meet expanding demand throughout North America, new area codes will be rolled out starting Jan. 7.

Waiting for LECs

As if the telephone industry wasn't facing enough area code challenges, AT&T's Personal 500 Service still requires switch upgrades by the local telephone companies before customers can actually use it.

The 500 service was announced in July, but its tariff went into effect yesterday. Under the service, each user is assigned a "personal" 500 telephone number that follows the individual around by bumping unanswered calls placed to other wired or cellular phone numbers, fax machines, pagers or voice mailboxes as specified by the user.

The idea is for users to become untethered from a fixed location without having to miss important incoming communications. The service costs $1 to $7 per month, depending on the number of options the user chooses; voice mail service is an extra $5.95 per month.

But until local phone company switches can recognize a 500 number and know what to do with it, AT&T is "all dressed up with nowhere to go" with the service, according to Jon Mellor, an AT&T spokesman.

The exception is Nevada Bell in the Las Vegas area, which can recognize 500-service area codes. AT&T "is confident there will be a good penetration in January" of local phone companies that recognize their 500 numbers, Mellor said.

The service represents a more flexible version of AT&T's 2-year-old 700 service, which allows users to forward a phone call to another number. That offering costs $7 a month but will soon drop in price to parallel 500-service rates.

The 700 call forwarding service requires users to know the called party's personal identification number (PIN) or bill the call to a calling card or other number. The 500 service requires only that callers know the called party's phone number, although users can elect to set up PINs for individual callers to help them track whose calls they are paying for.

BY JOANIE WEXLER

ICA heading off 'back door tax' for info highway

BY DAVID ROHDE

Washington, D.C.

User groups here are still vigilantly on the lookout for any proposals that would put the burden of paying for the information superhighway on the backs of the businesses and consumers.

And they are finding them, despite the death this year of legislation that would have mandated broadband net buildouts and subsidized rates for nonprofit groups, with a likely increase in telephone rates for everyone else.

In a letter to Vice President Al Gore sent earlier this month, Brian Moir, counsel to the International Communications Association (ICA), charged that education and library groups are using a current Federal Communications Commission review of local exchange carriers' (LEC) rates to sneak in a provision to wire classrooms and libraries.

What's in a price cap?

Price caps are maximum-priced indexes set by the FCC for services offered by the dominant LECs — the RBOCs and GTE Telephone Operations. These carriers may charge amounts less than or equal to the price caps. The actual profits they derive from these services aren't restricted like they were before 1991.

At issue is a part of the FCC's 1994 review of the LECs' so-called price caps. Several groups have told the FCC that an extra allowance of the carriers' revenues — amounting to well over $1 billion in a four-year period — be set aside for telecommunications infrastructure in schools and other institutions.

To justify their proposal, these groups seized upon the FCC's original notice of its price cap review last February. The FCC asked commenters to state "whether, and if so how, the commission should revise the LEC price cap plan to support the development of a ubiquitous national information infrastructure."

But Moir — joined by Bradley Stillman, general counsel of the Consumer Federation of America — wrote Gore that such an allowance would be a "back-door tax" on business and residential telephone billpayers.

Moir and Stillman's language was even harsher in a separate letter to FCC Chairman Reed Hundt. They noted that the proposals would also allow LECs to keep any of the set-aside money they did not spend instead of using it to lower the price caps.

"Any money not spent directly on schools or libraries would represent cost-free capital and added cash flow to the LECs, totally funded by captive telephone ratepayers," Moir and Stillman wrote Hundt.

Moir and Stillman argued against the doomed Communications Act of 1994 in the Senate, sponsored by Sen. Ernest Hollings (D-S.C.). The incoming chairman of the Senate Commerce Committee, Sen. Larry Pressler (R-S.D.), has said he will oppose attaching such provisions in the next reform bill.

VARs

Continued from page 27

office routers and bridges, and the AccessBuilder remote access servers, said 3Com's Roberts.

The program is an alternative to 3Com's more traditional regional Bell holding company relationships, particularly those in which carriers' network integration or managed network divisions act as the user's contact for 3Com products, Roberts said.

To help familiarize 3Com VARs with Pacific Bell ISDN and frame relay services, the carrier is setting up an organization to train them, offer configuration and pricing data, and serve as a help desk. The VARs will be entitled to earn fees for the ISDN and frame relay connections they sell, Roberts said.

Pacific Bell officials said the program is being so well received that it is considering similar arrangements with the VARS of other major hardware and software makers.

"We're working with a number of other companies, but 3Com was the leader in helping us [get started]," said Afshin Mohebbi, executive director of channel development for Pacific Bell.

Adding another sales channel may provide a further boost to Pacific Bell's surging ISDN program, said Brent Bilger, director of product marketing for service providers at 3Com competitor Cisco Systems, Inc. in San Jose, Calif. But he noted it also would pose competition for traditional phone company agents.

At Cisco, 80% of sales volume is through direct sales representatives and 20% through phone companies, Bilger said. The 3Com program "is going to be an interesting thing for the telco salespeople, which is good for us because the telco people sell our products," he said.

RATE & TARIFF MONITOR

by Eric Paulak

Frame relay should be tariffed

Someone finally has brought a petition before the Federal Communications Commission and asked that inter-LATA frame relay be declared a basic service that has to be tariffed.

Their motives may be selfish, but their reasons are valid. Here's the deal.

The Independent Data Communications Manufacturers Association (IDCMA) filed a petition with the FCC on Nov. 28, asking it to declare AT&T's InterSpan frame relay service a basic service (*NW*, Dec. 5, page 31). As such, frame relay would be regulated under the Communications Act, and AT&T would have to file tariffs for it.

The IDCMA had three stated reasons and one implied reason why frame relay should be tariffed.

The first is that frame relay is a basic transport service, just like X.25, and does not meet the definition of an enhanced service, which would involve some type of protocol conversion on the public net.

According to IDCMA numbers, 90% of frame relay users do protocol conversions within their own customer premises equipment, not on the public net.

While one in 10 frame relay transmissions may go through protocol conversion on the public net, X.25 services are also subject to such conversions when using optional asynchronous transmissions.

Yet the FCC has ruled that the X.25 asynchronous conversion is an optional feature used only a fraction of the time — not enough to declare the whole service enhanced.

The second reason for tariffing frame relay ties in with AT&T's position as the dominant carrier. Just as AT&T is regulated differently because it controls a 60% chunk of the long-distance market, the IDCMA says AT&T should be regulated differently because it controls 35% — the largest share — of the frame relay market.

With just 35%, this may not be a good argument to regulate only AT&T. But with four main players — AT&T, MCI, Sprint and WilTel — controlling nearly 100% of the market, it is a good argument to regulate the whole frame relay market.

The IDCMA's final stated reason — and perhaps its strongest — is that because frame relay isn't tariffed, AT&T is allowed to bundle InterSpan with its frame relay hardware.

You may be able to get what seems like a better deal by going this route, according to the IDCMA. But since AT&T controls a significant part of both the frame relay hardware and services markets, it can limit overall competition, thus keeping prices artificially high.

This all ties back to the IDCMA's fourth "underlying" reason why AT&T should be forced to file frame relay tariffs. IDCMA members compete with AT&T as hardware suppliers and as providers of value-added networks. Under the current framework, they're at a competitive disadvantage because AT&T controls the pricing for both hardware and services.

Antitrust lawyers may be concerned with AT&T's competitive edge, but users aren't.

Users want the best service for the best price. But as long as frame relay isn't tariffed, users aren't going to get the best price — for the reasons mentioned above.

Some may counter that you can get a great deal with an untariffed service — you just have to negotiate for it. By tariffing frame relay, they say, you take away that large user's ability to negotiate the best deal.

That's not quite true. The only ones that can afford to negotiate every deal are the largest users.

And as far as taking away negotiating power, that's what contract tariffs are for.

By tariffing frame relay, you're simply giving the service a starting point for small users to give it a try and for large users to start negotiating.

Paulak is associate publisher for the Center for Communications Management Information, a provider of rate and tariff information in Rockville, Md. He can be reached at (301) 816-8950, Ext. 327.

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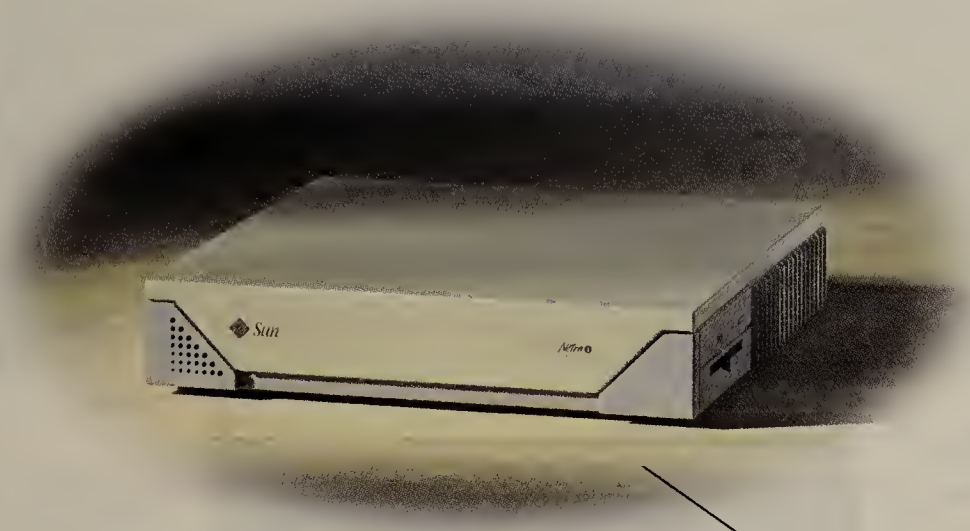

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NETWORK WORLD TECHNICAL SEMINARS

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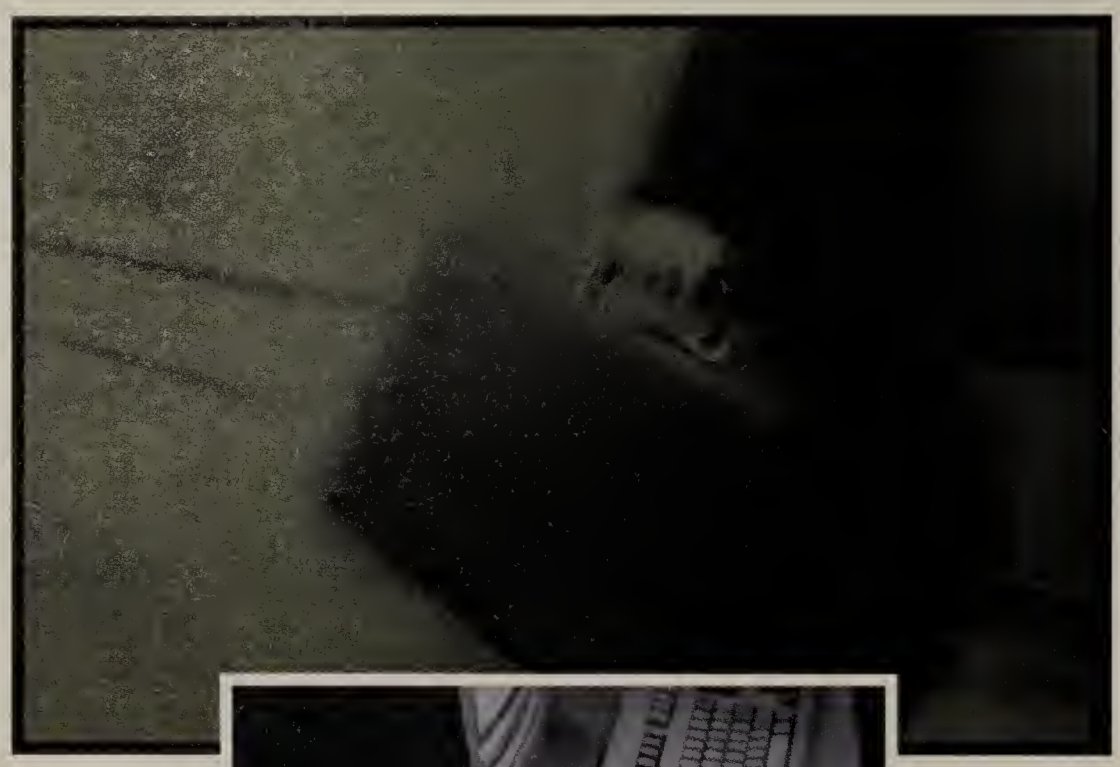

The new generation of client/server computing can yield tremendous benefits for the organization but only upon selecting and applying the appropriate design considerations and management methodologies. While traditional models serve as a useful guide, many aspects are new and radically different. The addition of JAD, RAD, and Spiraling methodologies provide powerful new tools which require new perspectives on managing and implementing distributed architectures.

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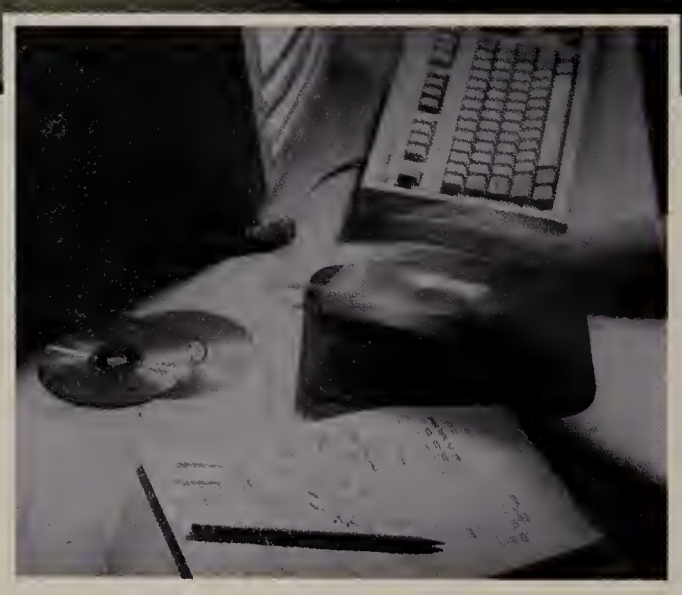

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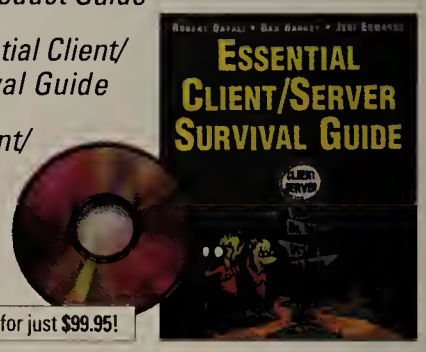

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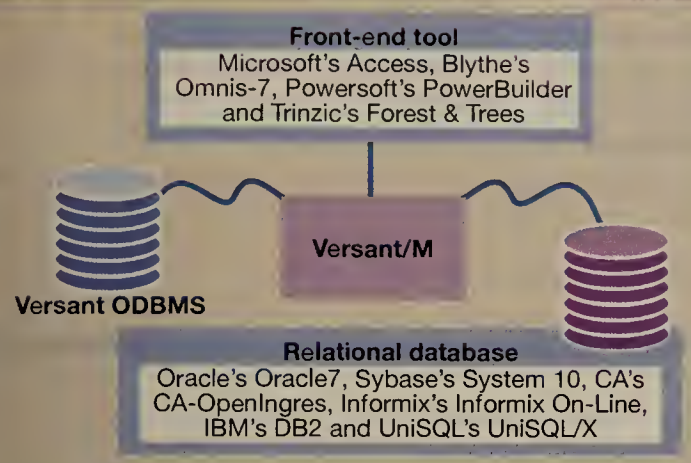
Bridging objects and relational data



Versant/M is middleware for joining data between relational databases and Versant's object database.

GRAPHIC BY TERRI MITCHELL

Middleware links object and relational DBMSs

BY BARB COLE

Menlo Park, Calif.

Versant Object Technology Corp. last week rolled out Versant/M, middleware that lets end users query and join data stored in the company's object databases, as well as several relational databases.

Corporate developers will be able to build applications with Powersoft Corp.'s PowerBuilder and other tools that have hooks in the Versant middleware.

The applications will then use the middleware, which includes both client and server components, to access Versant's Object Database Management System object database and relational databases from Oracle Corp. and others.

Object databases are typically used for applications that must access complex data types, which cannot be efficiently stored in relational databases.

While most relational database vendors plan to evolve their products to be more object-oriented, these iterations will not store data in the same way as pure object databases, such as Versant's. What's more, it will likely be about two years before the relational vendors

See Middleware, *page 34*

Microsoft takes stab at client/server databases

Vice President Allchin discusses benefits of Windows NT base vs. the competition.

Q&A

Microsoft Corp. soon will launch its attack on the client/server database market with a strategy centering around Windows NT and SQL Server 95. The effort raises questions about how a company that's used to selling low-cost software in volume will succeed in the client/server databases and tools arena.

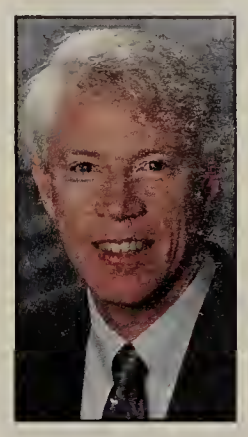
Network World Editor in Chief John Gallant and Senior Writer Barb Cole caught up with Jim Allchin, vice president of Microsoft's Business Systems Division, recently to discuss the company's plans.

You're gearing up to roll out SQL Server 95 in the second quarter of next year. How do you think that product will stack up against relational databases like Sybase, Inc.'s SQL Server System 10 and Oracle Corp.'s Oracle7?

The way I see it, all the [high-end] databases are going to eventually have the same basic features. This includes support for large [more than 100G-byte] databases, parallel query capabilities and replication. SQL Server 95 will do all that, too. And we'll include our replication tools in the box.

So how will you differentiate your database?

We feel that Microsoft's strength is that it can tie in all the data from the desktop. Our studies have shown that most corporations have more data in client applications than they do in legacy systems. This integration can be done with a consistent object model like OLE. We'll also be the leader in price/performance. Plus, our database will be tightly integrated with the operating system on which it runs — Windows NT. It will also be easier to install than the others.



Beyond the basic features you describe, what do you think people are looking for in a database server?

People don't want a database; they want an information server. They want to be able to use it as a messaging server, as well. To do that, you need to concoct an application program interface that will let you tie in everything from spreadsheets to databases. So, in essence, our Open Database Connectivity API is just going to get a lot richer and become more able to handle unstructured data.

Some people have said that Microsoft needs to build or buy a power development tool if it wants to play in the client/server arena. What do you think about that?

Our plan is to make Visual Basic more powerful and to tightly integrate it with OLE. But I think [Microsoft] Office may become more important than Visual Basic as a client/server development environment. If you can use the spreadsheet that's included in Office in your application, for instance, why would you want to write your own?

Sybase, Oracle and Informix Software, Inc. are building tools to manage distributed databases based on an object-oriented framework from Tivoli Systems, Inc. As a result, their databases may be managed in a common environment. Your tool for managing distributed SQL Server 95 databases, code-named Starfighter, won't be based on Tivoli's technology. Is this a drawback?

Obviously, we want to be able to interoperate, but we have to walk before we [can] run. There will be ways to interconnect our management environment [with theirs]. My dream is to have a management arena that can track SQL servers, messaging systems and transaction systems.

Your database strategy is centered on Windows NT. Does that lock customers into a closed environment?

Our strategy is to port Windows NT to all hardware platforms. So it's a lock-in, but it's like saying, 'You're locked into DOS.' Today, people pick proprietary Unix-based hardware and wind up getting locked into that.

BRIEFS

Oracle Corp. last week said it developed a Microsoft Corp. Open Database Connectivity driver linking its Cooperative Development Environment 2 family of development tools with **Rdb databases.** Oracle completed its acquisition of the Rdb software from Digital Equipment Corp. earlier this month. The driver will be available at no extra charge in second-quarter 1995.

Oracle: (415) 506-7000.

Intersolv, Inc. of Bethesda, Md., last week announced an enhanced version of its APS for Client/Server **application development** tool kit. Version 3.1 adds support for Visual Basic Extension Controls and OS/2 2.X controls, as well as enhanced support for Intersolv's PVCS configuration management software. APS supports Windows and OS/2 clients, and a variety of Unix servers and databases. The new version is available immediately, with pricing starting at $4,000 per user license.

Intersolv: (301) 230-3200.

Magma Software Corp. last week announced that for three months it will give away its Open Client Interface at no charge to users of Novell, Inc.'s **Tuxedo transaction processing monitor.** Open Client Interface lets users of Powersoft Corp.'s PowerBuilder, Microsoft Corp.'s Visual Basic, Gupta Corp.'s SQLWindows and other front-end tools invoke Tuxedo applications with a single line of code.

Magma: (212) 691-0300.

Digital Equipment Corp. last week announced a **groupware** bundle that costs less than the components bought separately. The firm said pricing for its new TeamLinks Office Server, which includes X.400-based electronic mail clients, workflow, conferencing and scheduling for Macintosh and Windows clients, will start at $22,300 for an OpenVMS version running on a VAX server. That is 40% lower than the cost of the individual components. A similar setup for All-in-1 users will be priced starting at $37,300 and will be available in VAX and Alpha versions.

Digital: (800) 344-4825.

ELECTRONIC COMMERCE

Web access, 'Net security steal the show

BY ADAM GAFFIN

Washington, D.C.

World-Wide Web connectivity and Internet security topped the agenda for vendors and users at the recent Internet World show here.

Vendors, from start-ups to giants such as IBM, used the show to announce a host of offerings for getting corporations onto the Web, while sessions on protecting corporate networks from Internet hackers drew standing-room-only crowds.

Verity, Inc. of Mountain View, Calif., announced the release of a Web server that combines its Topic text-retrieval software, Hypertext Transport Protocol software from Spyglass, Inc., public-key cryptography from Terisa Systems, Inc. and Interleaf, Inc.'s Cyberleaf Hypertext Markup Language conversion software.

Pricing for the Topics Information Server starts at $15,000. It will ship in the first quarter of next year for SunOS, Solaris, HP-UX and Windows NT platforms.

Spyglass separately announced the addition of programming hooks to its Enhanced Mosaic client software to allow secure commercial transactions. The software, based on the original Mosaic application developed at the University of Illinois, can now be enhanced with several security systems, including public-key cryptography from RSA Data Security, Inc. and the Data Encryption Standard (DES) private-key technology.

The company also announced an application program interface to link

See Show, *page 34*

Show

Continued from page 33

Enhanced Mosaic with other applications. Adobe Systems, Inc. said it would use the API to enable Enhanced Mosaic users to view documents created with its Adobe Exchange applications.

Spyglass also said its client now displays incoming text immediately, letting a user begin to use a document before graphics are downloaded.

No pricing was announced; Spyglass sells licenses to other software developers, rather than to users.

Also at the show:

■ Process Software Corp. of Framingham, Mass., said it will build Web servers for Windows NT and Windows 95 platforms, with the Windows NT version expected to ship in the first quarter of next year.
The software will include templates for quick Web development and incorporate support for proxies and other security measures. Pricing was not available.

■ Connect, Inc. of Cupertino, Calif., announced a service for putting companies onto the Web. Using servers at its headquarters, Connect will design and host corporate Web services.

The company will provide similar services for Internet-based private networks. Pricing starts at $1,995 to set up a Web server and $495 per month for maintenance.

■ Internetware, Inc. of Sunnyvale, Calif., announced an add-on for Novell, Inc. NetWare servers aimed at giving users secure access to the Internet. Internetware's IWare NetWare Loadable Modules provides a software-based firewall for preventing outsiders from gaining access to an internal NetWare network over the Internet. Pricing for IWare, set to ship in the first quarter of next year, starts at $995 for a five-user license.

■ Virtual Open Network Environment, Inc. of Rockville, Md., unveiled security software that incorporates both firewall and smart-card technology. Using smart cards with built-in DES encryption and authentication, the SmartWall offering lets internal users get onto the Internet while keeping outsiders out, the company said. Pricing starts at $18,000 per site.

✆Connect: (408) 973-0110; Internetware: (408) 244-6141; Process: (508) 879-6994; Spyglass: (708) 505-1010; Verity: (415) 960-7600; Virtual Open Network Environment: (301) 881-2297.

Middleware

Continued from page 33

ship products with object-oriented features.

"A product that lets object and relational databases interoperate is critical because it's unlikely that everyone is going to transition to [pure] object databases," said Hugh Bishop, an analyst at Aberdeen Group, Inc. in Boston.

Dan Suiter, principle software engineer at Siemens Medical Systems, Inc. in Hoffman Estates, Ill., said he is considering Versant/M because it will allow him to share code libraries between Versant object databases and relational databases, as well as provide connectivity between the databases.

Versant/M's server component runs on all major Unix platforms, and its client component runs on Windows 3.1. Windows NT and IBM OS/2 clients will ship in the first quarter of 1995.

In addition to Oracle databases, Versant/M works with those from IBM, Sybase, Inc. and others.

Available now, Versant/M costs $1,500 per developer.

✆Versant: (415) 329-7500.

INTERNET tip

BY ADAM GAFFIN

One in a series of occasional tips on Internet-based information services.

Object-oriented programming

The University of Geneva maintains a Web site devoted to information about objects. Resources include:

- ✔ **Object-oriented bibliographies**
- ✔ **Lists of vendors and products**
- ✔ **Answers to frequently asked object questions**

To access: http://cui_www.unige.ch/OOinfo/ is the URL.

Gaffin can be reached at agaffin@world.std.com via the Internet.

SHARED LOGIC

by Marc Myers

Is there a method to this madness?

The business climate of the 1990s is turbulent. World markets are becoming increasingly complex, competitive and fluid. In order to meet the demands of the new marketplace, businesses must perform at higher levels, increasing their productivity and quality while maintaining profitability.

The new challenges and pressures facing businesses today are not temporary or cyclical in nature. Instead, they are a result of fundamental changes in the way business is being conducted. Those who face the new environment head-on without expecting a regress to "business as usual" will prevail in years to come.

The introduction and proliferation of graphical user interface (GUI)-based client/server technology in almost every major corporation in the world is a perfect example of the unpredictability of today's markets. Six years ago, GUI client/server did not exist. Today, it is ubiquitous.

Client/server is the flag bearer of this new worldwide market. It is fast, flexible, cost-effective and powerful. It is also complex and carries significant risk.

Client/server applications are often implemented with little understanding of the associated risks. What a person needs to succeed in client/server is a solid and realistic understanding of the tasks at hand and a guiding methodology to track progress through these tasks.

There are a handful of MIS directors who have developed successful methodologies that they use to guide their projects to success. These methodologies tend to be specific to an environment with a known set of resources. But it is rare that an MIS director has the time to sit down and develop such a complex and detailed document.

In most cases, new client/server systems are developed using traditional mainframe methodologies, which tend to fail miserably when applied to client/server projects. Initial failure is typically followed by a period of shock and dismay while the department struggles to save face by pushing out a series of smaller client/server applications, which follow no disciplined process and tend to create long-term problems.

The alternative is to follow a packaged methodology provided in an off-the-shelf process management kit. But even these offerings tend to scare off users that view them as being not specific enough to their needs.

A better solution is flexible process management comprising modifiable methodologies. Instead of deploying a static methodology and expecting that it will apply to each client/server project, users should deploy a methodology that can be modified based on their changing needs.

Modifiable methodologies would be immediately useful to all corporations attempting to grasp and achieve success with client/server. They would provide the ability to follow standard, reusable project plans and to save different versions of the methodology for specific project types.

This is essentially an object-oriented approach to process management. The generic class, if you will, is the vendor-supplied methodology.

All the new instances of that class inherit the attributes of the generic class but allow the end user to create site-specific changes. This way, users can create multiple methodologies for all their project types by simply modifying the generic class.

As we reflect on the significant advances in the software industry that have occurred in just one year, the need for flexible, scalable applications and flexible methodologies to build those applications is obvious. What will make this scenario achievable is the integration of generic, comprehensive methodologies with specific input from the end user.

Myers is president of Client/Server Connection, Ltd., a Cambridge, Mass., firm specializing in client/server software solutions. He can be reached at (800) 622-1108, Ext. 522, or via CompuServe at 71332,1726. Myers' column alternates in this space with that of META Group, Inc.'s Mike Rothman.

EDITORIAL INSIGHTS

Money for nothing?

FCC officials have visions of dollar signs, not sugar plums, dancing in their heads this holiday season. The reason? Bidding for spectrum among hopeful providers of broadband personal communications services (PCS) has the feds drooling over the prospect of a windfall — maybe even more than the $10 billion Uncle Sam was hoping for.

Auctioning is a hell of a lot more reasonable than handing away spectrum, which is what the feds did for current cellular providers. But the auction proceeds aren't found money. Selling the airwaves has its downsides.

For one thing, PCS winners will start off with big bills to pay — particularly winners in big metropolitan areas — even before they start shelling out millions to build their networks.

That doesn't bode well for pricing, which is the key to PCS' success. It's hard to see how PCS carriers will compete on price with cellular providers, which will have time to upgrade their networks to better support data transmissions while PCS nets are being built.

Perhaps more important, this focus on federal revenue may be causing the FCC to harden its heart to customers.

Consider the users of wireless LANs, hand-held computers and other industrial and medical equipment that operates in unlicensed shared-use spectrum under the FCC's so-called Part 15 rules. They'll be kicked off the airwaves without compensation and without recourse to other spectrum if the FCC has its way and auctions off the spectrum.

The FCC's engineering staff has opposed the auction, saying existing devices can't share the bands with new services. "Reallocation would jeopardize the significant private investment already made in developing new technologies under Part 15," the FCC itself told the Commerce Department.

What's ironic is that Japan and Europe recently allowed unlicensed use of the same 2.4-GHz band, following the lead of the U.S. 10 years ago. That would have made it possible for manufacturers to build unlicensed equipment for an international market. So much for that.

Big players like IBM and AT&T, plus a host of smaller firms such as Zircom Corp., are expected to voice concern about the FCC plans in comments filed today. The industry is also pulling together to fight the proposal through groups like the Wireless Opportunities Coalition. You can reach this group at (202) 328-6088 or on the Internet gopher to wireless.policy.net.

If you're concerned about this idea, give the FCC a call at (202) 416-0800. There has to be a better balance between the needs of users and the demands of the federal budget.

JOHN GALLANT jgallant@world.std.com

TELETOONS

FRANK AND TROISE

THE BLUE VIEW

by Anura Guruge

Helping users should be the goal of IBM, Cisco competition

The current battle between IBM and Cisco Systems, Inc. for control over the Systems Network Architecture LAN/WAN internetworking market should, in theory, be beneficial to users. Competition is always healthy — it is the mother of invention and the godfather of realistic prices. In contrast, monopoly or complacency just frustrate and exploit customers.

There is, however, a belief users have that IBM and Cisco are, at least for now, more concerned about scoring points against each other than taking the time to help customers understand what is becoming complex, leading-edge technology.

In September, with the announcement of IBM's price-busting Nways 2210 Multiprotocol Router, revamped 6611 Network Processors and the promise of the innovative, stand-alone 3746 front-end processor, Big Blue stated in no uncertain terms its intention to do battle with the rampaging bridge/router vendors, namely Cisco (Oct. 10, page 38). Cisco's response has been massive, swift and incisive.

In October and November alone, Cisco announced a built-in SNA node concentrator gateway capability; Data Link Switching Plus (DLSw+), which nicely positions Cisco's proprietary and value-added facilities alongside the DLSw's comparable functions; support for the popular Binary Synchronous Communications; comprehensive support for SNA over frame relay; support for conversion of SNA over X.25 traffic to Logical Link Control traffic; and a new software architecture called Native Client Interface Architecture (NCIA). (Significantly, an Advanced Peer-to-Peer Networking offering was not a part of this extensive list. This was probably not accidental. Outside the AS/400 community, APPN is still in limbo. Given the current tensions, Cisco was unlikely to give IBM a leg up with APPN by appearing to endorse it.)

Some parts of Cisco's response were, however, coincidental rather than triggered by IBM. Cisco's vaunted channel-attached router, unveiled on Oct. 10, had been in the works for a long time — in fact, it was previewed at the fall INTEROP 92. And Cisco's acquisition of Kalpana, Inc., also in October, was fortuitous. However, the fusillade of SNA-related announcements Cisco unleashed on Oct. 26 and Nov. 14 were definitely part of a carefully thought-out counter to IBM.

Things are moving at such a rapid pace that many users say they cannot keep up with the new features that seem to be hitting the market on almost a weekly basis. Many users don't have the time and resources to objectively evaluate these new capabilities and determine how they could be best exploited in their networks. They are having to rely more and more on vendors' claims and support.

Cisco's node concentrator gateway, if reliable when delivered early next year, will be an outright technological winner. It will add significant advantages to Cisco's channel-attached router, DLSw+ and SNA over frame relay. This type of gateway, which is the most sophisticated of the SNA LAN gateways users can implement, acts as a minihost to downstream SNA nodes such as PCs, AS/400s and 3174s. It dramatically reduces the number of nodes that have to be defined at an SNA mainframe and minimizes the SNA control sessions that have to be maintained across a WAN, while still ensuring that the mainframe has management visibility of all downstream nodes. Reducing the number of sessions that have to be sustained across a WAN makes life easier both for the TCP/IP encapsulation of SNA postulated by DLSw+ or SNA over frame relay.

IBM's OS/2 Communications Manager and Novell's NetWare for SAA are two products that have traditionally provided this type of gateway capability. So Cisco is now among some exalted company. Such a gateway now also enables Cisco to easily get around the 1,020 SNA node limitation that may have plagued Cisco's channel-attached router initiative. We might not, however, have heard the end of this channel-attachment issue.

There are rumblings that Cisco may be infringing on one or more of IBM's channel-attachment patents (*NW*, Oct. 3, page 4). Obviously, neither side can comment. In legal circles, patent battles are referred to as the "sport of kings" — the ante, and consequently, the spoils, are high. Through the years IBM has played this sport with considerable success, notably in a similar situation involving Cisco's Advanced Peer-to-Peer Internetworking (APPI) strategy. For six months prior to APPI's demise, there was much open talk about how it violated IBM's patents. In the end, the patent issue caused Cisco to abandon APPI.

While the node concentrator gateway and DLSw+ are potential winners for Cisco, NCIA is a different matter — at least regarding LAN-attached devices. The goal of NCIA is to encapsulate SNA data into TCP/IP at its source, in the workstation itself. It is feasible that Cisco will, in time, try to extend encapsulation to also include mainframes. In any event, with NCIA, SNA traffic will only occur at the very end points of a network; it will be encapsulated in TCP/IP even before it hits the LAN.

The issue here is not the encapsulation of SNA within TCP/IP. With DLSw, IBM even endorses this approach. The issue is whether PC resources should be used to perform this encapsulation/decapsulation function — and run both an SNA and TCP/IP stack — when we have powerful bridge/routers that can do that. (I will elaborate on this in a future column.) Ironically, IBM, with its somewhat poorly conceived AnyNet access products, advocates the same notion. And just as AnyNet in this form hasn't exactly taken the world by storm, NCIA is unlikely to, either. For the time being, users are advised to look before they leap into NCIA.

We obviously have not seen the end of this epic battle between IBM and Cisco. It is IBM's turn for a counter. In September, IBM previewed High Performance Routing, which could tilt the balance back in Big Blue's favor.

If IBM does not respond, we could be seeing the genesis of a fundamental power shift in the SNA market, which could kill competition. We don't want that to happen.

Guruge is an independent consultant specializing in internetworking and IBM network architectures. He can be reached at (603) 878-1303 or via the Internet at aguruge@mcimail.com.

GROUPWARE

by Thomas Preston

Notes Express doesn't fit users' needs

Lotus Development Corp.'s release of Notes Express, a low-end groupware client, is indicative of a disturbing trend in the networking industry. Simply stated, software development firms are not taking customers' needs into consideration when developing or expanding upon a product.

Prior to Notes Express' debut, trade publications speculated that the product would be a run-time version of Notes. Instead, Lotus delivered a "skinnied-down" version of its leading groupware package. As a result, many Notes users were surprised, then angered, once they realized the impact — or lack thereof — Notes Express would have on their organizations.

Notes Express is shipped with electronic mail and six application templates for developing shared discussion databases, news databases, a reference document library, a company phone book, database catalogs and logging Notes activity. Lotus' apparent strategy behind Notes Express is to offer Notes-committed companies an inexpensive E-mail solution while providing templates for creating databases and sharing information among end users. However, Notes Express has none of Notes' design and development capabilities and offers fewer application templates.

More importantly, Notes Express users cannot access databases that were developed using full Notes. For companies that use Notes as a strategic application development environment to achieve a competitive advantage but had hoped to find in Notes Express a more cost-effective solution, this means living with the significant cost justification required for large-scale deployment efforts.

For example, a client of mine that is a leading retailer currently uses Notes to track the development of all its advertising projects. This application uses the Notes' workflow module for routing and distributing project information through the life cycle. Today, this application is being used only in the retailer's corporate office. However, the company's long-term objective was to provide Notes to all of its field managers — more than 500 people — in order to make advertising information more readily available to those most affected by it. Because Notes Express cannot be used with this particular application, the retailer is forced to either live with the current deployment of Notes (in the corporate office only) or provide significant cost justification for further deployment, which may or may not occur, depending on the additional uses Notes may have at these sites.

Notes Express' lack of Notes' intuitive development environment also hurts users. This easy-to-use design feature does not require the standard systems skills other development tools demand, thus allowing people who are not systems experts to develop applications for sharing information among other employees.

With Notes Express, this end-user development capability is removed — applications can only be created with templates packaged with the product.

In addition, Notes Express forces systems analysts and developers to make another decision — whether to develop a full-featured business application using Notes or to provide a lesser-quality product using one of the Notes Express templates. Taking the latter approach may cause a company to toss out Notes Express (and perhaps Notes) if a similar, more reasonably priced product is released.

I am a Notes evangelist and a true believer that it can be used to resolve many information and communications issues that keep business unit managers awake at night. However, instead of products such as Notes Express that are virtually inoperable with Notes, Lotus should focus its efforts on developing a more LANable approach to packaging Notes.

For instance, why does Lotus require each LAN user to have a unique Notes ID? Companies are increasing their annual LAN expenditures every year. They should be able to reap some of the benefits that come from these expenditures without being required to purchase a license for every Notes user connected to a LAN.

Lotus could make Notes more LANable by segregating the ID component and the number of licenses purchased. The Notes ID could be sold at a reasonable price to each Notes user connected to the LAN. The executable programs could then be sold separately, thus allowing organizations to implement concurrent usage restrictions based on the number of licenses purchased.

Lotus is just one of a number of vendors that seem to be suffering from the Henry Ford syndrome: "We will sell any color of car you want, as long as it is black." This is an attitude vendors can't afford to have. In time, only those companies that take the time to listen to the needs of their customers and actually deliver a product to meet those needs will survive.

Preston is director of workgroup computing for McClurg Business Systems, a value-added systems consulting firm in Canton, Ohio. He can be reached at (216) 497-9153 or via the Internet at 74301.1107@compuserve.com.

IN-BOX

Tangling with VINES

Three cheers for David J. Buerger's column recognizing Novell, Inc.'s NetWare 4 advertisement for what it was (Nov. 21, page 86).

Of course Novell's product looked good when compared with two nonenterprise-ready products — Microsoft Corp.'s Windows NT Server 3.5 and IBM's LAN Server 4.0.

I certainly hope that Banyan Systems, Inc. takes the high ground here and fires back at Novell with both barrels for omitting any comparison with VINES, which provides the seven network services mentioned in the ad, and more.

Alan Smith
Network analyst
Tektronix, Inc.
Beaverton, Ore.

No rate change

Your recent article, "Newcomer to target token-ring switching" (Nov. 21, page 8) states that NeTREND, Inc. is expected to release its token-ring switch "...around the time the IEEE 802.5 committee releases the final version of its standard for 25M bit/sec token-ring switching, which is also known as dedicated token ring."

Please note that the emerging IEEE 802.5 standard for dedicated token ring will make no change in data rate (to 25M bit/sec) — it will be specified for 4M and 16M bit/sec data rates.

A major advantage of not changing the data rate is that the emerging standard will allow present token-ring adapters to be migrated from shared-bandwidth LANs to dedicated-bandwidth LANs, greatly increasing the 'Net's capability without modifying any end-user hardware.

This change can be made by replacing shared-LAN token-ring concentrators with dedicated token-ring concentrators, which requires only a simple equipment swap in the wiring closet.

Robert Love
Vice chairman, IEEE 802.5 committee
and senior engineer, IBM
Research Triangle Park, N.C.

Editor's response: The information regarding the 25M bit/sec data rate was provided by an industry analyst who had attended early meetings of the IEEE 802.5 committee where 25M bit/sec dedicated token ring was discussed. He was unaware of the decision to drop 25M bit/sec dedicated token ring from the specification.

Warp-ed logic

I must disagree with some of the Mark Gibbs views about OS/2 Warp in his recent column (Nov. 21, page 33).

Mr. Gibbs states that OS/2 Warp "doesn't yet have and is unlikely to acquire" the level of driver support, applications and network connections that Windows 3.1 now enjoys.

Regarding drivers, Mr. Gibbs is correct, at least for now. Windows 3.1 does have more drivers, but then, DOS once had more drivers than Windows.

Regarding applications, however, Mr. Gibbs is wrong. OS/2 Warp presently supports more applications than any other microcomputer operating system or environment available, running DOS, WIN16 and OS/2 applications with ease.

Regarding networks, I do not believe that Windows matches OS/2's ability to intermix protocol stacks and operate in mixed or complex network environments reli-

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In-box

Continued from page 37

ably. Network drivers and LAN clients are not included in the base Warp product, but network drivers or LAN clients can be obtained through network operating system vendors for the OS/2 environment. Also, I believe IBM is working on an add-on network utility product that will include drivers and clients for most networks.

For a street price of $75 to $80, OS/2 Warp is a tremendous value. It incorporates, among other things, preemptive multithreaded multitasking; a 32-bit flat memory model; support for DOS, Windows and OS/2 applications, as well as telecommunications and facsimile; Internet access and tools; and a highly evolved object-oriented user interface — all in a very mature, well-supported and integrated environment that will operate on a relatively modest hardware platform.

By contrast, Windows 95 is at least a year away, and it will not be as stable in its initial release as OS/2 Warp is today. Several shootouts have been conducted between prerelease OS/2 Warp and prerelease Windows 95 at user group meetings across the country where Warp outperformed Windows 95 to such an extent that Microsoft now refuses any more side-by-side comparisons.

IBM is not the most nimble, sensitive or visionary computer company around, but it is steadfastly honoring its commitment to OS/2 as a strategic operating system platform and seems to be reforming itself under new management. Microsoft, on the other hand, is creating confusion with a chaotic array of operating systems, application program interfaces (API) and standards. How can we be sure that Microsoft won't change its mind about Windows 95, Windows NT or one of its many WIN APIs for these platforms, the way it did with OS/2, and leave independent software vendors high and dry?

Before you dismiss this letter as a response from an OS/2 bigot, objectively compare the features, functions, compatibility, reliability, availability and cost of OS/2 Warp with the unavailable nonproduct called Windows 95. I believe that OS/2 Warp is the clear choice.

Brian Sumner
Director of information systems
Department of Correctional Education
Richmond, Va.

Gibbs' response: Since many of the leading applications are Windows-based and require just those drivers Mr. Sumner agrees OS/2 is missing, I think we can conclude that the breadth of application support for OS/2 can't be there.

OS/2 Warp is, in its own right, a fine piece of engineering. It should achieve some success and indeed probably will.

However, it is too little, too late and is promoted by a company that has never managed to understand the market. For all the faults of Windows and Windows 95, they are what has defined the corporate PC market today.

Microsoft is no more venal and manipulative than any other company in the industry. It is just because Microsoft is the king of the hill that everyone wants to push it off.

Show-and-tell

Regarding David Buerger's column about Internet-related issues (Nov. 28, page 78):

I too have high hopes for the Internet, though I'm still learning the ins and outs of the thing.

Having a carrier such as MCI Communications Corp. enter the field is encouraging. However, MCI will need to either lower the cost of its service or show me what else it will provide to make it worth my paying a $20-per-month fee, rather than going with other providers such as Prodigy, CompuServe and America Online.

Jess Piszczor
Automation and development consultant
Banc One Services Corp.
Westerville, Ohio

Riding the rails

In his column "A problem with there being no 'there'" (Nov. 28, page 16), Scott Bradner claims that students at Carnegie Mellon University easily bypass the censorship CMU has imposed by accessing open news servers or anonymous FTP sites. Right there, Scott has made the point on behalf of CMU.

The Internet is like the New York subway system — it can take you to the Metropolitan Museum of Art or Times Square. The subway does not impose censorship on where riders can get on and off.

According to Bradner's reasoning, because both an adult and a 10-year-old child can get to Times Square by simply getting off the subway at the proper exit, why not just bring the hookers into the subway in a train with a red light on it?

CMU, whether rightly or wrongly, has decided to view the Internet as a train — a vehicle for bringing someone to a destination. Neither CMU nor any organization can control the destination at which users will get off. But CMU certainly has the right to control whether its train has pornographic posters on its walls or prostitutes in specially marked cars.

Hank Nussbacher
Consultant
Inter-University Computer Center
Tel Aviv University
Ramat Aviv, Israel

Bradner's response: I believe Mr. Nussbacher has misread the intent of the column. What I was trying to say was that it is technologically infeasible to assert the kind of control that CMU was attempting. This statement should not be constituted as support for pornography.

Help desk

Continued from page 2

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Lastly, you can contact the ITCA for answers to your videoconferencing questions. The ITCA has chapters throughout the country. For more information, contact the group by phone at (617) 262-1929 or via fax at (617) 262-0907.

I administer an IBM LAN Server Version 3.0 network. I am looking for any books that will help me learn more about this network operating system. Can you recommend any?
Charles Arbeely, via the Internet

We're sorry to report that there are presently none. An electronic search of books in print at our friendly local Borders Book Shop in Framingham, Mass., turned up a single title from Ziff-Davis Press.

A call to the publisher revealed that the book, *Connecting with LAN Server* by Barry Nance, has not yet been published and is currently scheduled to debut in April. I'm sure by that time, Arbeely, you will already be an expert!

If anyone on the 'Net can help Arbeely, drop us a message and we'll be glad to pass it on.

NETWORK WORLD TEST alliance

Four Ethernet switches duke it out

XNET's ParallelSwitch earns distinction as fastest switch tested, but **Plaintree** and **3Com** models emerge as more versatile.

BY SCOTT HAUGDAHL

Upstart XNET Technology, Inc.'s XNET Series 1800 ParallelSwitch set the pace in our latest round of Ethernet switch testing, but in the end, products from Plaintree Systems, Inc. and 3Com Corp. proved to be the most versatile performers.

Plaintree's WaveSwitch 100 and 3Com's LANplex 6004 join Network Peripherals, Inc.'s EIFO from our previous tests in offering the flexibility and speed of a Fiber Distributed Data Interface port. Our testing proved that WaveSwitch was faster in our Alantec Corp. PowerBits multiport traffic generator benchmarks, but 3Com's LANplex offers greater configuration flexibility with its modular card approach.

Both products enable administrators to connect a server directly to the switch's FDDI port as the only station offering a 100M bit/sec pipe. Alternatively, the switch can be connected to an existing FDDI network. Another option is to use the FDDI port to interconnect multiple switches over distances of several kilometers using fiber.

XNET's ParallelSwitch board-level product was very easy to install in our server and proved to be a speed demon. The ParallelSwitch performed at or near full bandwidth in our raw throughput benchmark, taking top honors for our best store-and-forward switch performance to date.

Although the ParallelSwitch operates with any Extended Industry Standard Architecture (EISA) personal computer — even a nonserver — as a stand-alone six-port bridge, to have the adapter functioning as a server Ethernet card and take advantage of the NetWare Loadable Module (NLM) management capability, the adapter must be installed in a NetWare server. XNET soon will release drivers for Windows NT servers. If there's any drawback to the ParallelSwitch, it's the limited number of ports and lack of scalability outside the server.

The fourth switch in the lot, NetVantage, Inc.'s NV7500 is a compact, easy-to-set-up and easy-to-use unit suitable for workgroup environments. It performed well in our file-transfer benchmark but lagged in the packet crunching tests.

All things considered, the four store-and-forward mode units tested were a fitting way to bring to a close the current round of Ethernet switch testing. One observation worth noting for potential buyers: Of the 11 switches tested to date, the units that performed best carried a plentiful supply of buffer memory.

From our first set of benchmarks to now, our basic test requirement has been to evaluate switches with individually switched Ethernet ports, as opposed to a grouping of ports assigned to one Ethernet segment or bus. Our suite of switches was selected on the basis of providing us with a wide range of value-added capabilities with differing target markets.

FIND ME A HOME

Over the course of our Ethernet switch tests, we have drawn several conclusions about this nascent technology. Ethernet switches are finding homes in neighborhoods where existing hubs live today. So far, the majority of switching hubs are being deploying at existing hub locations. They require little or no change to existing hub wiring. In some cases, adding the benefits of switching to existing hubs simply means upgrading the hub repeater cards — which come with multiple 10Base-T or attachment unit interface ports — with hub switch cards. This approach is offered by vendors such as Chipcom Corp. and LANNET, Inc.

Testing methods

For the methodology we used in these tests, please refer to "How we did it" in our previous Ethernet switch review (Sept. 26, page 43).

In other cases, stand-alone switches can complement existing hubs by offering external ports that connect to an Ethernet segment at the hub. This allows desegmentation of groups of ports in a hub, using a switch to provide connectivity between segments.

Finally, there a few cases where small workgroups with intense applications and their own servers are candidates for stand-alone switches with a connection to a main segment or backbone.

Switches do not, however, automatically guarantee congestion relief since they are most effective when packet exchanges are distributed over multiple switch ports. For example, separating workstations on a LAN to give each its own Ethernet won't buy bandwidth if all of the workstations communicate with the same server.

We highly recommend using a protocol analyzer to determine what pairs of devices are communicating and how much traffic they are generating. With that knowledge, it's easier to consider whether to put servers on their own switch ports or use multiple switch port connections for each server. In the latter case, the server must have appropriate load-balancing software.

Another approach for improving total network throughput is to provide a single high-speed connection — such as 100M bit/sec Ethernet or FDDI — between a

Continued on page 40

NET Result

Product	NV7500	WaveSwitch 100	LANplex 6004	XNET Series 1800 ParallelSwitch
Key findings	Requires cross-over cable for connections to workstations or patch panel.	Lowest latency among these four switches; modular chassis design; supports 802.1d bridging.	Modular chassis design; supports 802.1d bridging.	2M-byte buffer promotes good performance; switch is based on EISA card for PC or server; several options of device management.
Switch type	Store-and-forward	Store-and-forward	Store-and-forward	Store-and-forward
Configuration tested	8 10Base-T ports, 1 AUI port	16 10Base-T ports, 2 option ports for FDDI or fast Ethernet	8 10Base-T ports, management module	6 10Base-T ports (BNC port model also available)
Vendor	NetVantage 1800 Stewart St. Suite R Santa Monica, Calif. 90404-4967 (310) 828-9898	Plaintree Prospect Place 9 Hillside Ave. Waltham, Mass. 02154 (617) 290-5800	3Com 5400 Bayfront Plaza Santa Clara, Calif. 95052 (800) 638-3266 (408) 764-5000	XNET Technology 426 S. Hillview Drive Milpitas, Calif. 95035-5464 (408) 263-6888
Price as tested	$3,200	$9,500	$12,500	$2,988

Continued from page 39

server and a switch that supports the same high-speed connection, and to make the switch responsible for exchanging data between unlike media.

BENCHMARKING

In our first review, we created a set of benchmarks that we feel are more realistic (to real-world networking scenarios) than tests that, for example, determine only one-way throughput. Keep in mind that our benchmarks are another set of metrics to consider when evaluating Ethernet switch technologies and vendors. Any given metric should never be the sole consideration when selecting a switch.

We purposely avoided tests that require hardware or software changes to workstations or servers; we simply swapped our "dumb hub" connections for "smart switch" connections.

Our first test consisted of a simple bulk file transfer between the workstation and server, across dedicated Ethernet segments — one 10M bit/sec Ethernet serving only one node — and a stand-alone port-to-port switch. In other words, the workstation and server segments have no other traffic, and only two switch ports are utilized. This allowed us to measure with consistency the lowest achievable switch latency and the highest possible file-transfer throughput. To be consistent with our first two reviews, the workstation remained an Intel 486/66-MHz PC with a 3Com Corp. 3C509 adapter with NetWare Virtual Loadable Modules (VLM), while the server remained a Compaq Computer Corp. EISA-based 486/66-MHz running NetWare 3.12.

Ethernet switch performance results (packet/sec)
Figure 1

Switch model	Packet size (in bytes)					
	64	128	256	512	1,024	1,518
ParallelSwitch	14,880	8,443	4,527	2,347	1,196	811
WaveSwitch	10,619	7,571	4,074	2,297	1,173	807
LANplex	4,725	3,718	2,735	1,792	1,151	794
NV7500	4,505	3,593	2,703	2,268	1,171	729
Maximum	14,880	8,445	4,528	2,349	1,197	812

SOURCE: PINE MOUNTAIN GROUP, ST. PAUL, MINN.

Our second test setup utilized Alantec's PowerBits. The test script was set up so every packet sent through a switch was also acknowledged with a 64-byte packet via the reverse path. This tested the maximum rate at which the switch can handle a data packet sent from one port to another, with a short return acknowledgment, or ack, packet on the reverse path, thus simulating a one-to-one client/server windowing protocol. A total of four switch ports were utilized — two for sending and two for acking.

LATENCY AND FILE TRANSFER

The latency of a switch is measured from the time the first bit of a packet is received on one port to the time that same bit is transmitted on a second port. Latency effectively acts as a brake on two-way packet exchanges. For example, tests show that most switches (and bridges and routers) can pass 64-byte Ethernet packets through at wire speed in one direction. However, if there is latency and one transaction is a send packet from a client with a receive packet from a server, there is a minimum wait of two times the latency for every exchange, lowering effective throughput. Protocols like NetWare's burst protocol and the File Transfer Protocol using IP windowing can help significantly reduce, but not completely eliminate, the effect of latency. If there are multiple hops between the client and server, then latency is even more of a factor.

Using our workstation/server test setup, we measured the round-trip delay of several NetWare Network Core Protocol packets on the wire. Packets used to measure latency were a command packet (a workstation sending a request to the server) and its corresponding response packet (the server responding back to the workstation).

Previously, we tested several products that operate in cut-through mode, where switch latency is independent of packet size. A forwarding decision is made as soon as the source, and destination addresses are received from the packet header. All of the switches tested here operate in store-and-forward mode, where switch latency depends on packet size since the entire packet is received before forwarding. A minimum-size 64-byte Ethernet packet is transmitted in 6.4 microsec (64-bit preamble) with a 9.6 microsec gap time plus 51.2 microsec (64 bytes by 8 bits per byte), for a total of 67.2 microsec. Thus, in a store-and-forward switch, a 64-byte packet has a minimum latency of 67.2 microsec.

Since all of the switches tested are of the store-and-forward variety, the latency is equal to the packet reception time — 67.2 microsec for 64-byte packets — plus the forwarding decision time. So the total latency is the (variable) packet time, depending on packet size, plus a nominally fixed overhead time.

Of the four tested switches, Plaintree's WaveSwitch exhibited the lowest latency, with frame size plus an average of 30 microsec of overhead. 3Com's LANplex was very close at frame size plus an average of 32 microsec of overhead. NetVantage's NV7500 turned in latency figures of frame size plus an average of 45 microsec of overhead. The ParallelSwitch figures were at frame size plus an average of 51 microsec of overhead.

Next, we set out to determine how latency affects workstation/server transactions. In this test, we transferred a 2.3M-byte file from the workstation to the server. We repeated the test multiple times to take advantage of any write caching by the server. Our benchmark illustrates the best that you can expect on any given port for a real set of transactions — in this case, a file transfer.

Switch throughput in a client/server environment (packet/sec)
Figure 2

Switch model	Packet size (in bytes)					
	64	128	256	512	1,024	1,518
ParallelSwitch	14,880	8,445	4,528	2,349	1,197	812
WaveSwitch	10,265	5,910	4,075	2,144	1,077	730
LANplex	4,464	3,375	2,263	1,644	1,077	730
NV7500	2,976	3,375	2,263	2,144	1,077	730

Maximum number of packets translated without packet loss in a simulated client/server environment.

SOURCE: PINE MOUNTAIN GROUP, ST. PAUL, MINN.

With a direct connection to the server — meaning no intervening switch — the 2.3M-byte file was transferred in 3.84 seconds, or at a rate of nearly 600K byte/sec, consuming almost one-half of the available Ethernet bandwidth. This speed was attributable not only to high performance networking hardware and software, but also to NetWare's 3.12 burst protocol with VLM workstation drivers. The burst protocol gave the switch being tested the benefit of several large one-way packet bursts.

When we introduced a switch between the workstation and server, the results were too

Black magic and switching

In our latest round of Ethernet switch testing, we noted that the NetVantage, Inc. NV7500's 10Base-T connections require crossover cables if connecting directly to workstations. That's because when Ethernet switches were first released, they were conceived as vehicles for connecting Ethernet segments and, thus, were designed as data terminal equipment (DTE). DTEs are designed to communicate with data communication equipment (DCE). But since workstations are also DTEs, a special crossover cable must be employed. This cable crosses two pairs of the four-pair 10Base-T cable — Pin1 and Pin 3 are crossed, and Pin 2 and Pin 6 are crossed.

With switches like these, the crossover cables can go straight to the workstation, or just to a patch panel, with a standard straight-through cable out to the workstation.

All of the latest switches no longer need to jump through these hoops. They utilize straight-through 10Base-T connections. A crossover cable is required only when connecting a 10Base-T switch port to another 10Base-T port on a hub or another switch — unless that hub or switch has built-in crossover ports, such as Kalpana, Inc.'s EPS-2015.

If provided, the attachment unit interface (AUI) ports on the devices also can be used to connect switches and hubs to each other. In the event an AUI cable is not available, microtransceivers may be used. In fact, if only one device such as the hub or switch has an AUI port, then a microtransceiver must be used to connect them. For example, if the hub has an AUI connection and the switch has only 10Base-T connections, then an AUI-to-10Base-T transceiver may be used at the hub, and a crossover cable may be used to connect to the switch.

It sounds confusing, but as a general rule, connect hubs to switches or a switch with other switches using crossover cables, and switches to workstations with standard straight-through cables. If it doesn't work one way, try it the other. Use transceivers and hub/switch ports with the "link good" indicator at the port to determine that the connection is valid.

Four switching contenders

■ NetVantage, Inc.'s NV7500

The NV7500 store-and-forward Ethernet switch contains nine ports in a compact, stand-alone chassis. Eight of these ports support 10Base-T connections, while the ninth is an attachment unit interface port for connection to a hub or backbone. The NV7500 10Base-T connections require crossover cables when connecting workstations (see story, this page). NetVantage already has an updated model that supports direct-attach connections to workstations.

The NV7500 supports the IEEE 802.1d Spanning Tree Algorithm, allowing it to be used in bridged environments without fear of creating loops. The switch may also be managed with Simple Network Management Protocol over the network, or by using telnet to connect to the box and issue native commands over the network, or via a serial terminal.

■ Plaintree Systems, Inc.'s WaveSwitch 100

This store-and-forward switch comes with 16 10Base-T ports and two option slots that support Fiber Distributed Data Interface or 100M bit/sec Ethernet connections.

The FDDI and 100M bit/sec Ethernet connections can switch packets to and from the 16 10Base-T ports. The WaveSwitch is housed in a rack-mountable chassis. It also supports the Spanning Tree standard, with additional filtering capability on specific addresses. In-band SNMP and serial terminal management is supported. The serial port may also be used to upload firmware updates.

■ 3Com Corp.'s LANplex 6004

The LANplex 6004 switch is a store-and-forward device housed in a rack-mountable chassis with room for four modules, including an FDDI module, LANplex Management Module, and Ethernet Switching Modules (ESM) with 10Base-T or RJ21 connections. The ESM modules implement the IEEE 802.1d bridging standard. LANplex 6004 is actually a little brother to the LANplex 6012, a unit that can accept as many as 12 modules.

Our test unit was equipped with a management module and eight-port 10Base-T ESM. The traffic from the 10Base-T ports is switchable to and from the optional FDDI module via express switching, a capability not tested in our review. A unique capability of the ESM modules is they allow different Ethernet ports to be grouped into IP subnets, with the LANplex providing IP routing between the subnets.

■ XNET Technology, Inc.'s XNET Series 1800 ParallelSwitch

The ParallelSwitch is the first unit we tested that is self-contained on a single, full-sized Extended Industry Standard Architecture (EISA) adapter. The store-and-forward switch provides six switched Ethernet ports and a seventh server port via the EISA bus. The ParallelSwitch also is available for ISA and Peripheral Connect Interface buses. The Ethernet ports are available as six BNC or six 10Base-T connections. The version we tested has 10Base-T ports. A nice touch on the BNC version is built-in termination for each port.

The ParallelSwitch can be managed one of three ways: via a built-in RS-232 port on the adapter's bracket, in-band SNMP or via a NetWare Loadable Module.

close to call. The LANplex turned in a time of 4.00 seconds, followed by the NV7500 at 4.01 seconds and the WaveSwitch at 4.03 seconds. The ParallelSwitch was also very close at 4.08 seconds. These figures represent a very respectable 4% to 6% of overhead for these store-and-forward switches.

PACKET CRUNCHING

The two packet crunching PowerBits tests conducted were throughput and packet loss rate. These are iterative tests that are included with every PowerBits. We selected packet sizes of 64, 128, 512, 1,024 and 1,518 bytes. The tests use four switch ports, with a total run-time for each test of 10 seconds.

The PowerBits throughput test determines the maximum packet rate that can be forwarded though the switch without losing a single packet. It runs a series of stream tests, performing a binary search over the range of possible throughput rates.

The test results for each of our four switches is given in Figure 1, along with the theoretical maximum on a single Ethernet segment with no intervening switch.

Our top-performing ParallelSwitch undoubtedly benefited from its large 2M-byte buffer to compensate for overloading during the 10-second test. The numbers turned in by ParallelSwitch on this test compare favorably with the Grand Junction Networks, Inc. FastSwitch — another switch with a large buffer — from our previous review. Unlike the ParallelSwitch, however, the FastSwitch was tested in a cut-through mode of operation with fallback to buffering. In both cases, the large buffer was a significant factor in better performance.

The ParallelSwitch was followed by WaveSwitch, LANplex and the NV7500 — in order of overall performance for this test. The WaveSwitch numbers compare favorably with previous LANNET MultiNet and Alantec PowerHub — which is not just a switch but also a router — tests. The LANplex and NV7500 compare favorably with our previous tests on the Retix SwitchStak.

The second PowerBits test, the packet loss rate, measured the number of packets that the switch lost when it was offered loads between 10% and 100% of the theoretical maximum rate, in intervals of 10%. For this test, two streams were sending data, while two streams where acking with 64-byte packets. The tests were iterated across the same packet sizes as the throughput test.

This test attempts to simulate a real-world client/server scenario, where, for instance, a client is acking a series of reply packets from a database server. The results are summarized in Figure 2. They indicate the maximum rate achieved without dropping a single packet.

Once again, ParallelSwitch was the leader, coming out on top in handling all packet sizes at full wire speed. For the remaining switches, only a few packets were dropped at the larger packet sizes. For example, at the maximum throughput with 512 packets, WaveSwitch only dropped 21 packets.

The large loss in packets at the smaller packet sizes for LANplex and NV7500 is notable. Keep in mind, however, that in real nets, small packets at wire speed are rarely generated. If that's not the case on your network, you need to have your network optimized.

All the units we evaluated had Simple Network Management Protocol manageability — a desirable feature, if for no other reason than to have an SNMP console occasionally check for operational status. Since the ParallelSwitch is a plug-in card for a server, it can also be managed via an NLM.

MESSAGE FOR VENDORS

After testing 11 switches, we have a message for switch vendors: Provide users with large buffers in the switch. It became apparent that those switches with the larger buffers performed best. At 10M bit/sec, buffers are filled and flushed very rapidly, so packets are delivered in plenty of time to avoid transport-layer time-outs. At least this is true on LANs; huge buffers on slower WAN circuits can lead to transport layer time-outs. So it's better to buffer and be a bit late than to drop packets altogether, leading to transport time-outs.

NETWORK WORLD TEST alliance

The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products. A list of alliance partners can be found on page 37.

Scott Haugdahl is a network analysis engineer at Pine Mountain Group, Inc. and spends his time troubleshooting large nets, training end users in protocol analysis and developing tools to let users better employ their protocol analyzers. He can be reached at scott@pmg.com.

Snail's pace of mgmt. change vexes users

CONTINUED FROM PAGE 1

foster tighter applications integration, improve management automation facilities, build integrated data repositories and devise some form of domain management — the top concerns users expressed in last spring's survey. But still, vendors aren't progressing fast enough.

"We don't want to simply control our management stations and tools; we want a package that can manage with more breadth," says Rich Roller, information systems director at the Guggenheim Art Museum in New York. "Our custom databases are better than what we can buy today." And that pretty much sums up user frustrations.

Users' management wish list

Based on survey data gathered last spring.

SNMP platforms
- Better application integration
- Improved automation
- Integrated management repository
- Domain management

Hub management applications
- End-to-end management, not just device control
- Improved automation
- Better integration with applications
- Virtual LAN management

LAN management applications
- Improved asset tracking
- Traffic analysis applications
- Increased automation
- Better integration between applications

Systems management applications
- Increased automation
- Better application integration
- Desktop Management Task Force-compliant products
- Improved quality of applications

SOURCE: MCCONNELL CONSULTING, BOULDER, COLO.
GRAPHIC BY SUSAN SLATER

PLATFORM PREDICAMENTS

Among the major Simple Network Management Protocol management platforms on the market, Cabletron Systems, Inc. appears to be poised best to meet user needs as it evolves its Spectrum product line.

Ed Boggs, senior network analyst for Holiday Inn Worldwide/Rescom in Alpharetta, Ga., says, "I'm amazed at Spectrum's power; I use it to monitor critical applications and restart them automatically."

Cabletron has managed to satisfy users such as Boggs by taking a proactive approach to measure the pulse of customer needs.

"We have managers and engineers working with our beta customers around the world to get a global view of users' problems so that we can respond to them," says Mark Truhlar, director of network management software development at Cabletron.

During the last half year, Cabletron has added the ability to distribute management applications and data among multiple Spectrum servers on the network, rather than have all the data reside in one box. This enhancement significantly broadens the software's functionality for users. Until now, Spectrum users could manage a single domain but did not have the ability to look at management events beyond their own boundaries.

The enhancement also means you can run an application on any server in the network, collect the data and ship it back to any number of management consoles.

Spectrum Version 3.0 offers several levels of integration, including a single management information repository. The repository is distributed among multiple Spectrum servers, although changes in a particular server's database are not automatically reflected among other databases.

The company has also devised a domain-based management framework that seems to address users' needs for software scalability. Multiple Spectrum servers are used to manage different domains of an enterprise network, and management tools can access information in any server's database. Alarms are also integrated across multiple platforms; they can be collected and rolled up to a central manager.

In the area of configuration tools, Cabletron has provided the ability to set up any device through the use of templates. That means you could devise a generic template once for, say a Cisco Systems, Inc. router, and use it to automatically configure comparable devices as you add them to the net. This type of tool will prove a huge time saver over manually setting up each device.

On the automation front, Cabletron is claiming some recent advances to alter the configuration of a group of devices at specified time intervals. Further, applications are automatically linked to managed objects through the discovery process. For example, when a particular device is discovered, the appropriate vendor-specific management tools for it are linked into maps and associated menus.

Basically, this goes a step beyond automation, so that once the software discovers new devices on the net, it has the ability to activate the appropriate management tools to monitor the new device. So you can create device profiles with management attributes, and the software assigns those attributes to new devices on the net once it discovers and classifies the new objects.

Cabletron's future plans include porting Spectrum to Microsoft Corp.'s Windows NT Advanced Server platform. Cabletron will also incorporate into Spectrum its Automated Connection Management System for managing switched environments and will add support for Novell, Inc. NetWare server management.

TORNADO WATCH

Over at Hewlett-Packard Co., the net management development crew is addressing integration on several fronts. Shortly after we conducted our management survey last April, HP announced Workgroup Node Manager, a product that provides departmental management, in effect, filtering and forwarding events to the OpenView platform.

The product essentially off-loads some processing from the centralized OpenView, thereby addressing one of the chief user concerns from the survey — scalability. Workgroup Node Managers handle local polling of devices and issue some corrective measures at the local level, while also forwarding major alerts and event data up to OpenView. This not only off-loads OpenView, but it also cuts down on bandwidth consumption over the backbone net.

HP also released a draft of its Metaschema — the database structure it will use to lure third parties — which describes a common data model for sharing management information. Early feedback from the developer community indicates that the schema needs more work before it becomes a robust data model.

With regard to improved automation facilities, HP has begun to support customized event parsing, which applies rules to individual network nodes. Until now, OpenView users could only apply event parsing to classes of devices; you might, for instance, have to treat all routers the same way. With custom event parsing, you can apply different rules to specific devices. Therefore, you can automatically isolate a critical backbone router from a feeder router.

On another front, HP's decision to integrate the NetLabs, Inc. NerveCenter into OpenView will result in a new level of automation and integration for management applications. NerveCenter, which had been a core component of the now-defunct NetLabs' DiMONS/3G platform, is a sophisticated event manager capable of applying advanced rules sets to process and parse tons of management information.

NerveCenter may prove to be a major boon for OpenView because it will provide a major forklift upgrade in automation facilities. This month, HP and NetLabs released the NerveCenter version for OpenView. One of NerveCenter's advanced capabilities is that it can change the behavior of the management system. If certain applications or devices appear shaky, NerveCenter can alter the polling interval or the type of information it is collecting.

It can also drive other tools, such as trouble-ticket applications. NerveCenter, for instance, could even be used to start a diagnostic application that could report the trouble. NerveCenter could then kick off a trouble-ticket application in response to the diagnostic report.

SunSoft, Inc. also is coming out with support for NerveCenter this month as part of its new Encompass platform. With HP and SunSoft already in the NerveCenter camp, all users need is for IBM and Cabletron to follow suit and the vendors could make major progress with regard to addressing users' integration issues.

That commonality at the event manager level would give the major platform vendors common application program interfaces, common functionality and common event facilities.

Tornado is the next big step for OpenView; Tornado tackles scalability and lays the framework for distributed enterprise management. The product is expected to touch down in mid-1995. When it arrives, it will deploy Network Node Managers as satellites to a central platform. Essentially, that

Status update on mgmt. vendors' progress

Vendor	Features supported			
	Distributed servers	Common repository	Distributed intelligence	Distributed applications
Cabletron	✔	✔	Restricted to hubs	✔
HP	1996	1996	Tornado in 1995	1996
IBM	1996	✔	Systems Monitor	1995-1996
SunSoft	1Q 1995	1Q 1995	SunNet Manager	1995

✔ = Currently supported

SOURCE: MCCONNELL CONSULTING, BOULDER, COLO.

DMTF makes some headway

The Desktop Management Task Force has been moving along at a brisk pace. The recent developers' conference in Boca Raton, Fla., produced several more management information formats used for describing systems, LAN adapters and printers. Other working groups are attacking new areas such as servers and software applications. The most encouraging sign is a larger group of products that are DMI-compliant and interoperable.

"The whole DMTF effort is a response to problems of integration and automation," says Shannon Gray-Voight, DMTF chairwoman from Intel Corp. "We will provide the enabling technology to solve these problems on the desktop."

The DMTF is shifting from developing technology to providing solutions, which is what users are demanding. Look for interesting products to appear in the first quarter of 1995.

means putting a full OpenView implementation on downstream nodes to replace the more lightweight Windows Node Managers. Each satellite can carry a complement of management tools and forward events, and applications on the central platform can access information in any satellite.

About a year after Tornado hits, HP will follow with Synergy, which introduces the common data model and logical repository users sorely need.

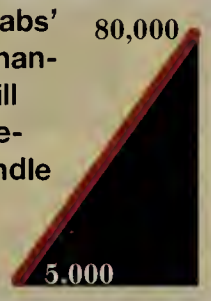
NETVIEWS

IBM's NetView for AIX platform has been evolving with its counterpart, Digital Equipment Corp.'s PolyCenter Manager for NetView. Their recent joint release provides a first step toward domain management through a backup capability, whereby another NetView platform can take over in case of failure.

Essentially, IBM has devised a backup management platform that monitors the primary platform and, in the event the primary manager fails, the hot standby steps in and takes over the domain. Administrators will, however, have to configure the backup platform for a specific domain.

IBM has made significant scalability strides with its Systems Monitor for AIX. In addition to local polling, the Systems Monitor discovers local topology and passes the information to a remote NetView platform. Without the Systems Monitor, an administrator would have to locate each device. The Systems Monitor collects all information locally and sends it up to the central NetView manager, as opposed to the central manager discovering what's out there.

The addition of NetLabs' NerveCenter event manager to OpenView will allow the HP management platform to handle as many as 80,000 nodes, up from just 5,000.



In the future, the Systems Monitor will be able to support other distributed management applications such as inventory, configuration, security and accounting.

SunSoft has been working quietly to enhance its management offerings. Its Project Encompass will spawn a whole new range of products.

Encompass isn't a replacement for SunNet Manager, but rather, a complement in the sense that it is a multiple operator system, so multiple people can look at parts of the enterprise and manage it. SunNet Managers, in the future, will feed workgroup information to a larger Encompass entity that will serve as an enterprise-level platform. SunSoft's Project Encompass will make extensive use of the NetLabs DiMONS/3G technology. A new component, dubbed Cooperative Consoles, will tie together the various SunNet Managers into the network.

Cooperative Consoles will increase scalability and integration by allowing a set of SunNet Managers to share topology information and alarms. The future introduction late next year of a Cooperative Reporting module will allow multiple platforms to share information, as well. Another level of integration will be offered by the Portable Management Interface, which will provide portability between the SunNet Manager 2.2.2 and Encompass platforms. That functionality is expected in the first quarter of 1995.

Taken individually, each SNMP management platform vendor appears to be moving toward the same goals, albeit from different directions. At this time, though, no vendor has made the quantum breakthrough to completely address the concerns and dissatisfactions that current users report.

A common data model and distributed platforms that really cooperate are the major missing ingredients. The next major product releases should clarify the picture. The major question is, will any vendor leap ahead or will the incremental offerings continue? Only time will tell.

It's an implicit assumption that the platform vendors are the ones to advance integration and automation capabilities. However, this incremental progress still leaves a great deal to be desired from the customer's perspective. One network administrator at a large financial services organization echoes this sentiment: "I'm really tired of hearing what's just beyond the horizon. My problems are happening today. I still have problems integrating information from many sources into a coherent view of my environment."

Information integration is a difficult problem to solve. Michael Disabato, manager of network strategy development at McDonald's Corp. in Oak Brook, Ill., says, "As for database integration, it ain't happening!"

The Management Integration Consortium is addressing these issues, but there may be other, more short-term alternatives. ISICAD, Inc., based in Anaheim, Calif., has introduced InfoManager — an object-oriented, graphical front end that extracts and integrates information from a variety of sources. The InfoManager can take information from SNMP Management Information Bases, SQL databases and other sources, and organize it in an integrated view for an administrator. This is a substantial step forward since the schema can be defined and distributed throughout the organization.

InfoManager is still under development, but it is a promising step forward that should be watched closely.

If InfoManager can't solve the problem, perhaps LEGENT Corp. can step into the breach. The Herndon, Va., company has stepped up with the recent introduction of AgentWorks, a set of products to address scalability, automation and integration of management data. Domain Managers, one of the company's AgentWorks products, collects information from sources such as systems, devices, applications and databases. The information is placed in a single repository with their EnterpriseView, where all the data is collected and organized. EnterpriseView also handles autodiscovery of the intelligent agents, configures them and collects their information.

Other LEGENT applications, such as the Paradigm trouble ticketing solution, can be integrated with the repository. LEGENT also provides for management scalability by offering hierarchical agent structures — basically, remote agents — where data is collected and processed before it is forwarded to a central-site manager.

Elizabeth Nichols, the chief architect for the firm's AgentWorks division, says AgentWorks goes a step further. "The incorporation of correlation technology in the AgentWorks architecture increases the automation since many discrete events can be correlated and analyzed automatically."

The products from ISICAD and LEGENT are promising; they may be some of the keys needed to better integrate and supplement existing platforms.

Even with the incremental progress vendors are making, users seem to have an accurate reading of what's going on. Vishal Desai, an engineer at NASA's Goddard Space Flight Center, is still looking for help. "I don't see enough automation help from the vendors; we have to write all of our own scripts," he says.

Desai's frustrations are no doubt shared by other users who are waiting for vendors to deliver interoperable net management products. Unfortunately, the platform vendors, the Desktop Management Task Force, framework vendors such as LEGENT, and hub vendors are all making progress — albeit slowly. However, the solutions that customers really need are still not within their grasp.

These improvements may not increase customer satisfaction in the near term. While vendors have done a good job of raising expectations for management solutions, they are short of meeting them. It will take substantial improvements to make an impact on administrators who already have heard it all promised.

The next releases of products may offer some breakthroughs in integration, automation and scalability. Vendors are under a lot of pressure, and as Holiday Inn's Boggs observed, "they have to step up to these challenges or they will fall away."

McConnell is president of McConnell Consulting, Inc. in Boulder, Colo. He can be reached via the Internet at johnmc@mcconnell.com.

NW needs you!

***Network World* will examine the state of net management products again this spring. If you have specific net management needs or ideas for comparing vendor offerings, contact Charles Bruno, features editor, at cbruno@world.std.com.**

Hub vendors declare independence

Hub vendors have been moving quickly to enable their products to be managed independent of a central SNMP management platform.

Most hub vendors are focusing their attention on their own products with frameworks that manage switches, hubs, routers, bridges and terminal servers. These frameworks also provide links to other management tools on a Simple Network Management Protocol platform.

3Com Corp., for instance, has focused extensively on providing enhancements in the area of automation facilities.

Lionel DeMaine, 3Com's Transcend product-line manager, says, "Our focus on automation is in our SmartAgents. We have given them the ability to take local actions in order to respond to problems as quickly as possible and to avoid overloading the management platform."

Other automated features from hub vendors include autocalibration to provide automatic profiling and baselining of typical behavior on LAN segments. Easier configuration is provided by treating groups of devices as a single object that can be manipulated.

Chipcom Corp., meanwhile, has been focusing on integration. Its ONdemand management system incorporates data collected by remote monitoring (RMON) probes with information collected by embedded intelligent processes. Chipcom is moving toward virtual network management one step at a time, beginning with physical infrastructure management and proceeding to logical workgroups.

Chipcom is moving toward virtual network management one step at a time, beginning with physical infrastructure management and proceeding to local workgroups.

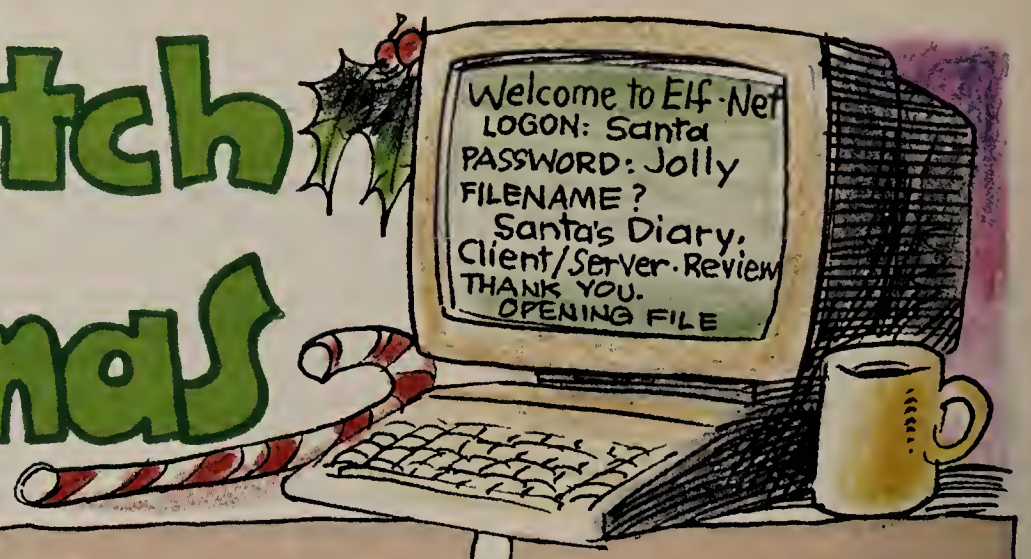
The idea is to package RMON probes in intelligent applications, and RMON probes and other tools in the hub itself. This allows the hub to heal itself and operate independently of the central-site manager.

UB Networks, Inc. is breaking new ground with its recently announced Access/Empower architecture. Intelligent applications are actually loaded into the hub so that local actions, monitoring and error correction operate autonomously, that is, without requiring intervention from a remote management platform. These levels of automation and integration will also help with scalability.

Like 3Com, UB is focusing on making its hubs more independent in the realm of hub management, which would then decrease its reliance on central-site management platforms and enable Access/Empower products to take actions locally.

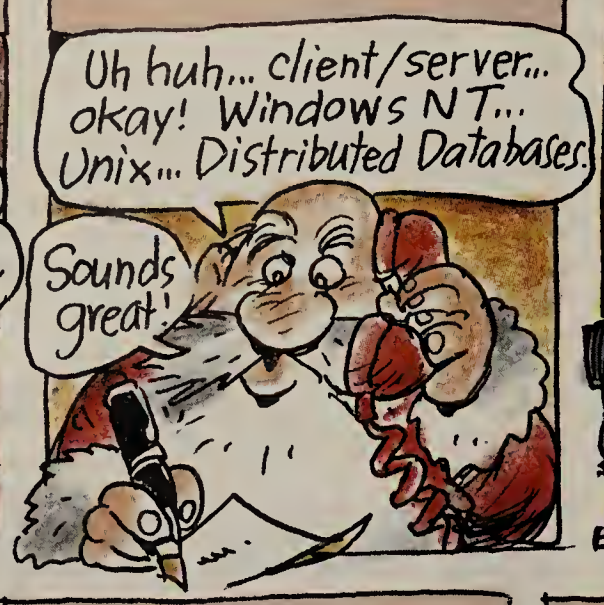
How The Glitch ALMOST Stole Christmas

by Phil Frank & Joe Troise



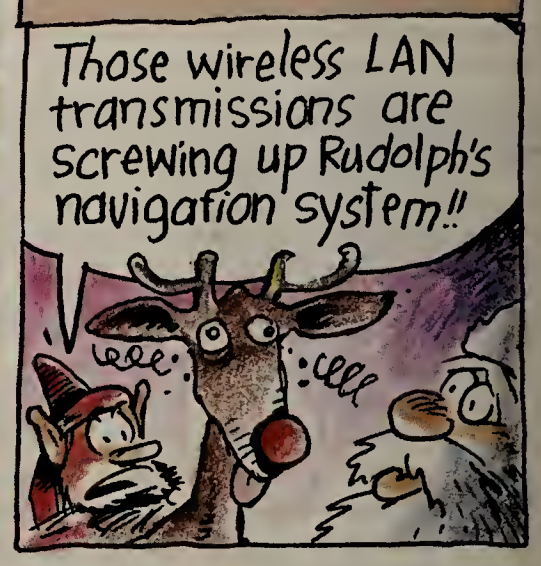
Jan. 15, 1994—Today I became painfully aware that my global toy manufacturing and distribution business had outgrown its original network architecture.

Jan. 15 (very late)—What to do...I wonder how the Tooth Fairy Organization solved this problem...I'll give them a call....



Jan. 28—I called in a consultant to discuss our options for client/server implementation....

April 4—Installation of our client/server network began today, and there were some unforeseen difficulties....

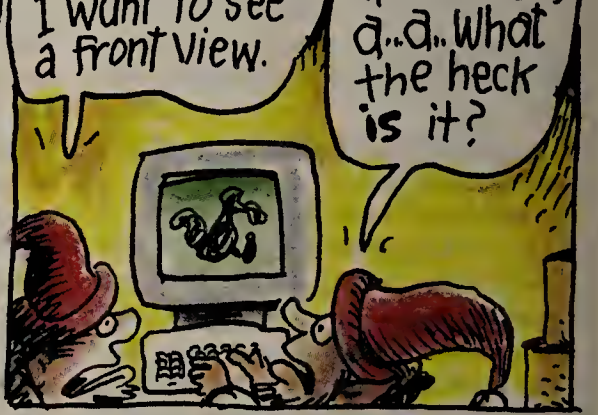


May 12—Today we ran a few test applications...employees' second-guessing may be a problem....

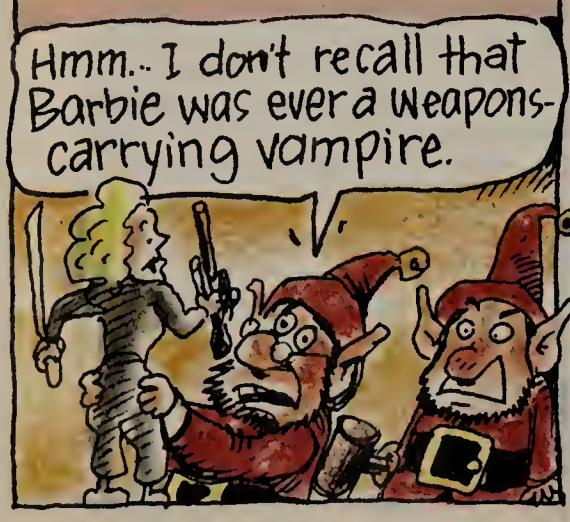
June 5—The decentralization into workgroups has been difficult for some senior employees (those over 100 years old), who must work with younger staff....

July 4—Bad news...during data migration from the mainframe to the client/server database, file synchronization failed....

Sept. 15—We've finally linked design and production schedules to the Unix workshop stations...but there are still a few problems....



Oct. 7—Our first attempt to transfer blueprints to a manufacturing machine was a little buggy...my beard continues to fall out....



Nov. 27—Thank heaven we put that Santa Clause into our contract requiring the vendor to take extraordinary steps to solve interoperability problems....

Dec. 25 (late)—Mission accomplished! Mrs. Claus and I celebrate with some 10BaseTea....

Dec. 26—News of our success is spreading faster than a packet on an ATM network....

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SNMP manageability scorecard

Artel StarBridge Turbo Bridge	69
Datability DXA-550 Bridge Router	50
General DataComm LAN*TMS Bridge	62
Magnalink Series 4000 Bridge	47
N.A.T. LANB/220 Remote Bridge	77

Overall scores, June 14, 1993

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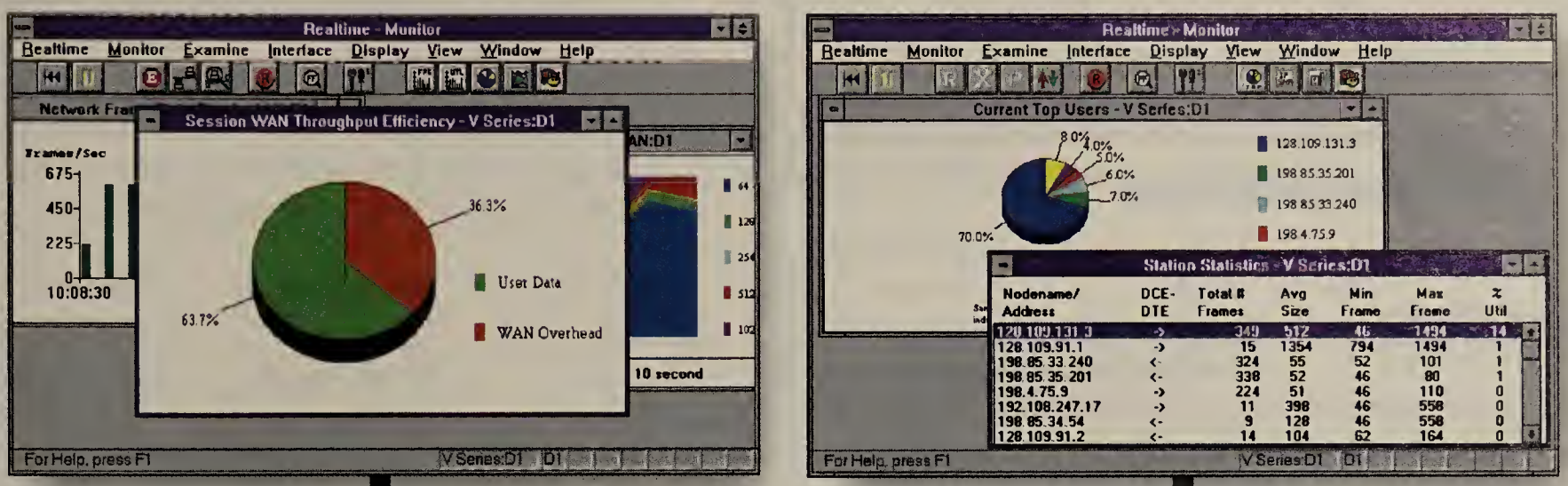

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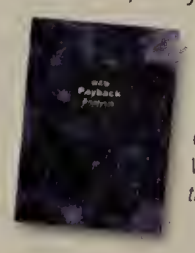

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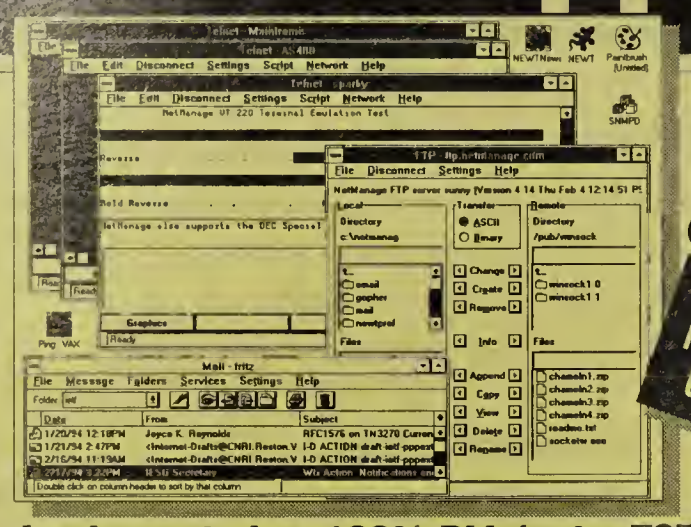

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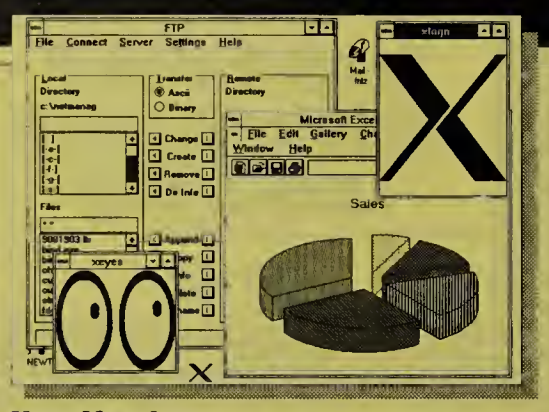

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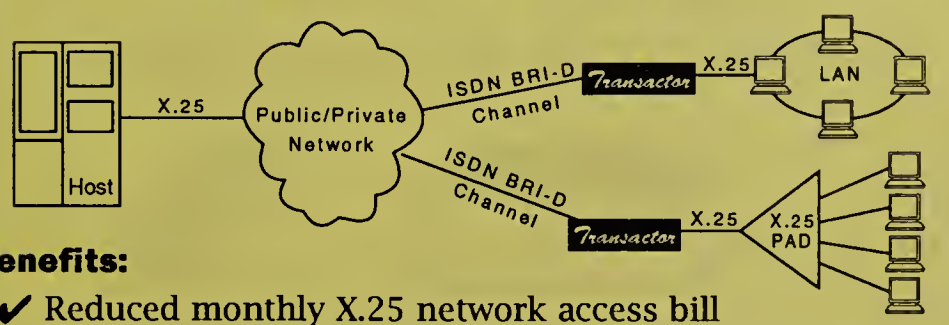

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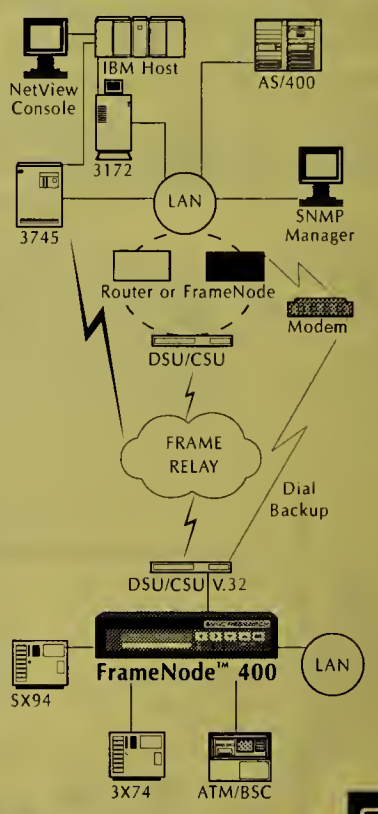

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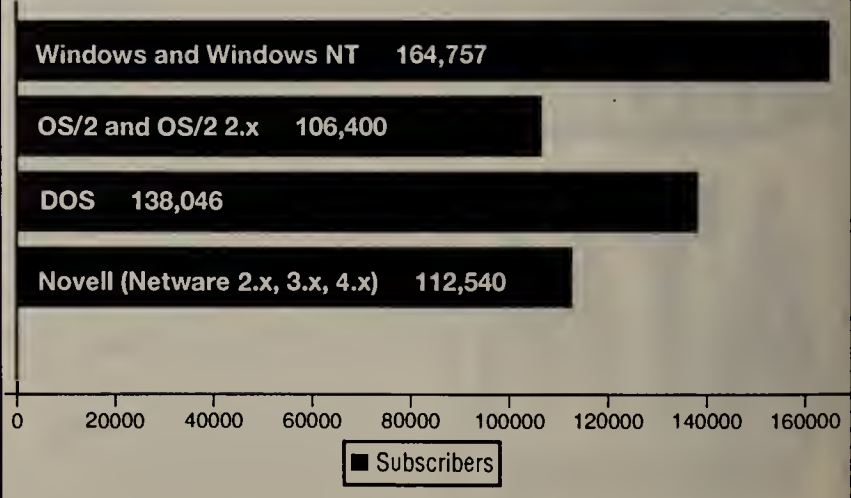

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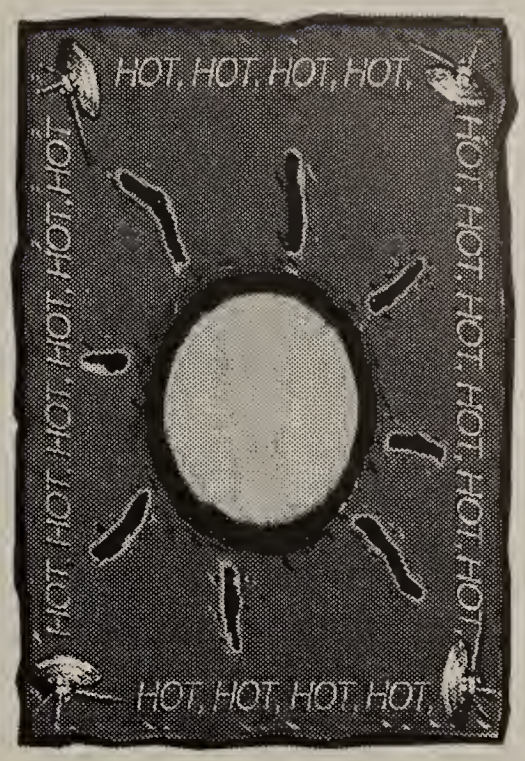

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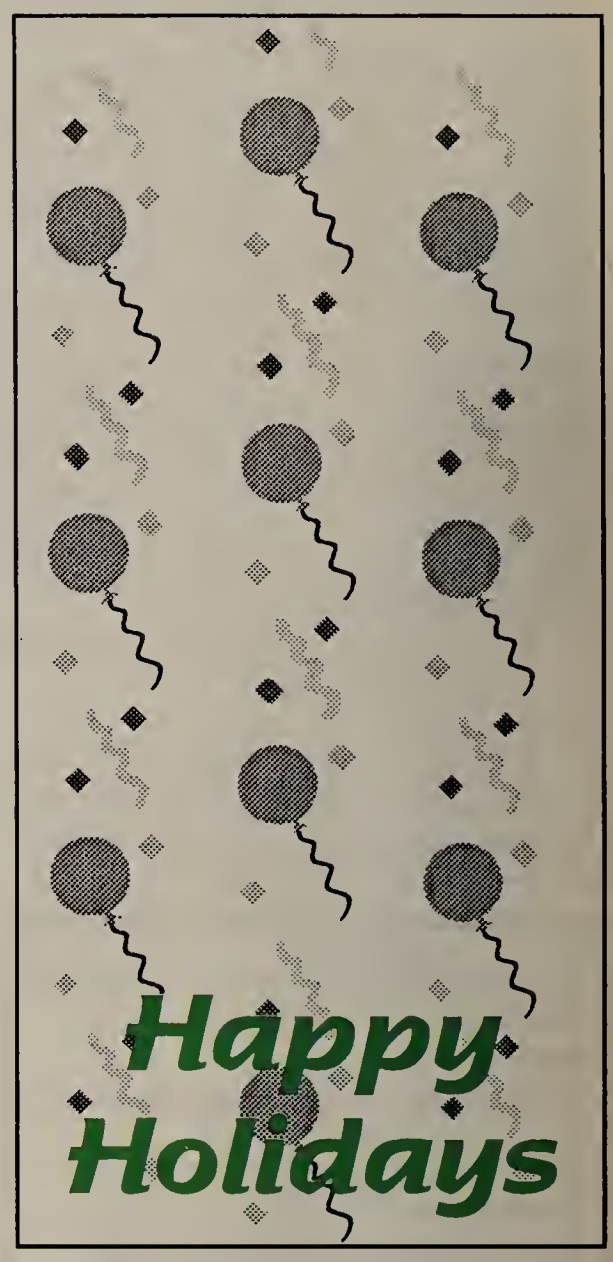


Info/Man

Continued from page 1

into the management of distributed client/server enterprises as we can," said Gary Schubel, a senior product planner for the Info/Man product. "Info/Man is also going to be a central player in our object-oriented net management rollout, Karat, because we are not going to develop a new product that will perform its function."

Karat is object-oriented management technology IBM will use to build common management applications across all of its major systems — OS/2, OS/400, AIX and MVS.

To make it Karat-compatible, IBM will package Info/Man data in an object-oriented "wrapper," based on IBM's System Object Model (SOM) and Distributed SOM (DSOM) technology.

"From a Karat console, Info/Man will look just like another object," Schubel said. "Wrapping applications in SOM/DSOM will be the way most legacy applications are handled in the Karat environment."

IBM will also enable Info/Man to store and retrieve configuration and problem information from Windows, Sun Microsystems, Inc. SunOS, HP Unix and AIX/6000 workstations. Today, Info/Man gets data only from OS/2 and 3270 devices or CICS clients on other mainframes.

To manage the resolution of net problems enterprisewide, IBM will build gateways between Info/Man and its own distributed management platforms while relying on other vendors to do likewise for non-IBM platforms using an IBM-supplied API. For example, IBM last week announced it will resell NetTech, Inc.'s Automated Internetwork Problem Reporter (AIPR) software, which enables HP's OpenView platform and Info/Man to exchange data.

"Users with distributed managers like OpenView have had little access to the Info/Man database where most enterprise management information resides," said Ellis Gregory, president of NetTech.

For remote LAN administrators who do not have a distributed manager but want to access Info/Man data, IBM will offer a stand-alone application that can run on OS/2, Windows, IBM AIX and HP-UX-based workstations.

Other enhancements for Info/Man include: an E-mail interface that will asynchronously dial a technician or net administrator, notifying them of a problem; a REXX interface for OS/2, AIX and CICS clients, enabling users to more easily build in automation functions; a Motif interface to Info/Man from HP Unix platforms; and an increase in the number of open windows on the current Info/Man graphical interface from two to 32.

MIXED REACTION

Analysts were surprised to hear IBM is planning to lean so heavily on Info/Man.

"We really thought it was dead not all that long ago, but from the looks of it, IBM is sort of reinventing Info/Man," said Atul Kapoor, a principal with the Kaptronix, Inc. consultancy in Haworth, N.J.

According to Paul Mason, research manager for the enterprise systems management program at International Data Corp. in Framingham, Mass., "Info/Man is widely installed but also widely disliked because of its interface and cost. Most users will still likely move help desk functions like Info/Man off of the mainframe."

But users had a different view.

"When you have a distributed enterprise with lots of hubs, routers and legacy equipment, it's tough, if not impossible, to get your arms around everything," said David Winther, manager of telecommunications for American Greetings in Cleveland, Ohio. "We need to tie the information in Info/Man with OpenView to get a much clearer idea of what's going on in our enterprise."

✆IBM: (800) 426-2279.

Big Apple

Continued from page 12

corporate citizen."

Apple will market only the AppleShare Client component, while Miramar will sell the server portion, as well. Pricing will be announced at the time of Personal MacLAN's release in February.

■ Wall Data, Inc. is releasing an update to its SNAps product family that gives Macintosh desktops greater access to mid-range systems.

The SNAps Folders 400 server software sits on the SNAps Advanced Program-to-Program Communications gateway on any AppleTalk LAN. A Macintosh user employs the system's AppleShare Client to access the shared folder, which looks like an i: drive, said Alex Gernert, Wall Data's product marketing manager for Apple products.

Wall Data is updating its existing SNAps 5250 Application System/400 connectivity product with a new file-transfer function, allowing Macintosh users to exchange data with AS/400 libraries. The binary transfer capability via an AS/400 enables Macintosh users to more easily exchange files with Windows, OS/2 and DOS clients, as well.

Pricing will be announced upon release but will be in the range of $1,000 for SNAps Folders 400; the current SNAps 5250 costs $345.

■ Global Village Communication, Inc. will show new members in its family of Macintosh fax, remote access and net modem products.

The OneWorld Combo is a telecommunications server bundling Global Village's network fax and remote access products. It ships with a 30-user license for the GlobalFax software for $1,499; with two optional PowerPort/Mercury fax/modems, it costs $2,099.

The new OneWorld Network Modem is a 19.2K bit/sec PowerPort/Mercury modem that can operate anywhere on a LAN and comes with server, client and administration software. The package is priced at $1,199. The newest version of OneWorld Fax server supports fine-line gray-scale images, audio feedback and transmission logs. It comes with a choice of modems and support for Ethernet or LocalTalk. Pricing starts at $999.

✆Apple: (408) 862-3385 or (805) 966-2432; Miramar: (805) 966-2432; Wall Data Apple Business Unit: (408) 369-6900; Global Village: (800) 736-4821; MacWorld Expo: (617) 361-8000.

Lotus

Continued from page 1

cials said.

Key to assuaging users concerns about forklift upgrades is continued support of the existing file-server version of cc:Mail, which will gain a new message store by mid-1995 that will make it possible to defragment hard drives without taking the network down. Lotus Vice President Michael Zisman said cc:Mail clients will be able to work with either existing post offices or the new CommServer.

ZISMAN

Zisman said Lotus will roll out the new server by mid-1995, the same delivery period set for LCS. However, he said some components, notably native support for X.400 and the Simple Mail Transfer Protocol, might not be fully available across all platforms until late 1995. Some analysts said they would not be surprised to see that slip into early 1996.

Zisman added that the Lotus Messaging Switch, formerly known as EMX, would be beefed up with X.500 technology from Unisys Corp. and would be sold as a way to link enterprises to each other and to back-end mainframe messaging systems.

Seeming to steal a page from Novell, Inc.'s GroupWise messaging strategy, Zisman said Lotus is pursuing an architecture in which Lotus clients can talk to other vendors' messaging platforms and in which other vendors' clients can access Lotus infrastructures.

Both Notes and cc:Mail clients and servers will gain support for Microsoft Corp.'s Messaging Application Programming Interface (MAPI). This will let MAPI clients, such as Microsoft Mail, use some CommServer services.

However, officials said they remain committed to continued support of the Vendor Independent Messaging (VIM) API, which is now backed mainly by Lotus and its third-party vendors.

The new CommServer would essentially be a Notes server with software enabling cc:Mail clients to use its object/message store and directory services. Managers will be able to link Notes servers via X.400 rather than via the existing proprietary Notes protocol.

Zisman acknowledged users were saying they did not want to rip out cc:Mail nets to gain functionality.

Among those with no immediate need to switch to client/server is Bill Crow, research and development task leader for the U.S. Department of Energy. Crow said the department's cc:Mail network, with more than 20,000 users, is working fine. "No one's presented any good reason yet why we should [switch]," he said.

Europe

Continued from page 8

head start, said Berge Ayvazian, senior vice president of The Yankee Group consultancy in Boston. It has services up and running, while AT&T-Unisource has just announced an agreement in principle, and Sprint's alliance is bogged down in regulatory challenges that could take months to resolve.

The Big Three battle for Europe

Carrier	Services	Countries
*New AT&T-Unisource venture	Frame relay, VPN, private-line, messaging and managed data	Austria, Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and U.K.
MCI-BT	Frame relay, VPN, managed data, messaging, EDI and videoconferencing	Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Norway, and Sweden
*Sprint/France Telecom/Deutsche Bundespost Telekom	Managed private-line, enhanced dial-up, VSAT, fax and switched voice	France, Germany and U.K.

*Planned services pending joint venture approval.

"It will be two to three years before any of them have truly global infrastructures and net management centers," said Len Elfenbein, president of Lynx Technologies, Inc., an international telecommunications consultancy in Fairfield, N.J.

For example, the AT&T-Unisource joint venture may face its headaches in terms of infrastructure, according to Martin Varsavsky, chief executive officer of Viatel, Inc., which just activated its European switched voice and virtual private network in September.

The PTTs serving Europe use proprietary signaling systems and different sets of standards, making it difficult to switch traffic between nets, Varsavsky said.

But, like Flaherty, he acknowledged that AT&T's resources and position as the only telecommunications entity that sells everything from switches to services make it a formidable competitor.

Still, many European countries do not allow foreign companies to build their own networks. Instead, they must strike deals with each PTT to use capacity that's already in place, which some said will impose real constraints on the new venture.

"When they can put in their own facilities or get a separate facility, then there's something to get excited about," said William Coopman, chairman of council of the International Telecommunications Users Group. Until then, AT&T-Unisource will essentially be a reseller, he said.

The joint venture does give AT&T a single entity in Europe that its customers can call on, according to Mark Langner, a senior consultant with TeleChoice, Inc. in Verona, N.J. It also serves as a single point of administration to weave various telecommunications threads into a network.

"Whether or not they pull it off or whether it breaks down in infighting remains to be seen," Langner said.

Comments?

See "How to reach us" on the back page.

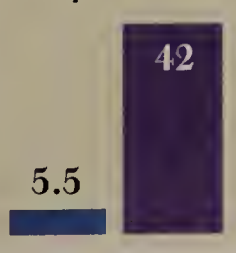
Pentium

Continued from page 8

is slim, I don't think we're going to trust them."

It is easy to see why users are suspicious. On one hand, IBM last week suspended sales of its Pentium-based systems, and market research firm Gartner Group, Inc. called on users to delay volume purchases of Pentium machines. On the other hand, most vendors stood by their systems and said they have seen little or no drop-off in customer demand.

Intel will ship about 5.5 million Pentium processors this year, far fewer than the 42 million 486 processors that will ship, according to Dataquest.



THAT PESKY FPU

But even those vendors standing by the Pentium acknowledge that the chip's floating point unit (FPU) flaw could affect application servers processing major mathematical equations. Then again, results from an AT&T Global Information Solutions (GIS) survey aired last week show that 85% of network applications do not even use the FPU.

AT&T GIS, whose entire personal computer and server lines are based on the Pentium chip, conducted the survey to determine what kinds of applications and how many customers are affected. Networks using Pentium-based servers for communications subsystems, word processing, electronic mail and network management should not experience any problems, an AT&T GIS spokeswoman said.

The bug should have even less impact on file servers running Novell, Inc. NetWare and other leading network operating systems since they do not use the FPU to dish files off to users. And most network servers handle file and print services anyway, not application processing, said Rick Lindsay, a principal with network equipment reseller Lindsay Computer Systems in Austin, Texas.

"Networks may be the only place it's safe to use [the Pentium]," Lindsay said.

However, users with SQL database servers and other application servers — especially those used for financial and scientific modeling — should stay away from the Pentium, he added.

Another place where the Pentium flaw might come up is in networks with dumb terminals where all programs are run on the server, such as some Unix systems, according to Franc Romano, director of server research for Aberdeen Group, Inc. in Boston.

Fortunately, many customers probably do not need the Pentium for their networking needs, and it will not hurt for them to stick with 486-based machines for at least a while, Lindsay said.

But according to a survey conducted last month for *Network World* by First Market Research Corp. in Austin before the Pentium brouhaha, users have big plans for the Pentium. The survey finds that 24% of the 100 companies interviewed have installed Pentium-based computers, while 43% are considering them for installation in 1995.

Such demand is one reason most Pentium-based server manufacturers — including AT&T GIS, Digital Equipment Corp. and Sequent Computer Systems, Inc. — refused to follow IBM's lead.

IBM's defection has actually divided the computer community into two schools of thought: those who think IBM is overreacting and those who believe they have been betrayed by Intel.

"Intel has completely downplayed the problem," said Allen Dail, a software developer in Yorktown, Va. "Intel has said that the typical user would only see the flaw once every 27,000 years. But the typical user isn't the one who bought all these Pentium machines; it's people who bought it to do fast math, and that's what's broken."

Jeff Collins, president of Paros Software, Inc. in Atlanta, said: "What really bothers me about this bug is that it's not the kind of bug that would show up; if the bug happens to you, you don't realize that your calculation is wrong."

But Aberdeen Group's Romano said the issue has been overblown.

"It's just a computational error," Romano said. Even application servers may not be affected because they often route the application to workstations, where the actual computing takes place, he said.

The flaw, which shows up only when dividing certain pairs of integers, was discovered last summer by Intel researchers. But it was not widely known until last month when Thomas Nicely, a mathematics professor at Lynchburg College in Virginia, published a paper detailing his problems with the chip.

NETWORK WORLD

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Nextel

Continued from page 1

on the part of the firm that tested Nextel's enhanced special mobilized radio (ESMR) network for MCI.

The MCI-Nextel partnership originally was intended as MCI's foray into the wireless market, giving the carrier a way to offer PCS-like services ahead of competitors caught up in federal auction red tape. MCI intends to resell wireless bandwidth from other net operators instead.

"Who's to say that if the data had not been manipulated, MCI wouldn't have gone through with the deal?"

Sources close to the Nextel audio-quality trials said the consultancy that ran the tests and compiled the results, JMS North America, Inc. in Chantilly, Va., fabricated some results and bluffed about the methodology used in trials conducted in July.

One project participant, who was involved in figuring results of a small trial in May, said he saw "outrageous things going on" in the number crunching. "MCI was told that [JMS] used 12 demographically representative test subjccts. In fact, the company only tested eight and fabricated data for the other four," said the source, who requested anonymity.

Another source close to the project said that in the second phase of the trial, "both mobile and fixed test sites were supposed to be tested. But there were not any mobile tests; [JMS] blatantly lied to the client" and pretended there were such tests, in addition to manipulating some data, he said.

What may never surface, however, is just how much the allegedly botched tests impacted MCI's decision not to partner with Nextel. Motorola, Inc. unexpectedly entered the picture as a third partner when it traded all its SMR licenses to Nextel for part ownership of the company in August.

"Nextel was not rated well" during the tests, said Fred Sabour, who heads up all technical field trials for MCI, including the Nextel project. "I was not involved in the business decision making. But I would speculate that the technical [results] had a great deal of influence on the final decision."

However, Lenny Harris, general manager of wireless communications at MCI, maintains that is not the case. Harris, who participated in the decision not to partner with Nextel, said the reasons were simple: "We couldn't come to terms on Motorola's rights" concerning control of implementation and marketing, and on price.

Motorola also builds the equipment on which Nextel's network is based.

Harris and Sabour said they believe the tests were conducted fairly and accurately. Nextel expressed surprise at the allegations but declined to comment.

PUT TO THE TEST

The purpose of the trials was to evaluate how the voice quality of ESMR compared with: analog cellular networks; proprietary and standard flavors of Time Division Multiple Access, a digital form of cellular; and GSM in Europe — in efforts to assess the technical ability of ESMR to compete in the cellular voice market, Sabour explained.

JMS' chief executive officer, Paul Silverman, said it is JMS' policy not to comment on work the company has performed for clients.

The overall results, though, indicated that Nextel's quality was not on par with the others. "Cell sites went down. Plenty of stuff revealed that bugs had not been worked out," according to one trial participant.

The sources said that Phase 2 in July showed that Nextel's system performed better than in Phase 1 but still lagged the technology pack.

"The results were not conclusive from a purely testing environment," said one project participant. "But who's to say that if the data had not been manipulated, MCI wouldn't have gone through with the deal, perhaps at lower price, and used the difference to invest in the network?" he wondered.

MCI's current wireless strategy is to resell wireless capacity from other net operators, rather than running a facilities-based net itself, Harris said.

INTERNET tip

BY ADAM GAFFIN

One in a series of occasional tips on Internet-based information services.

Christmas in cyberspace

Cygnus Support has created the first virtual Christmas tree. A digital camera trained on the tree in the company lobby snaps a photo every 15 minutes and then sends the image off to the Internet. Other features include:

- ✔ **Blinking lights controlled by Internet users**
- ✔ **A service for sending Christmas cards via E-mail to friends (or, if you are desperate, yourself)**

To access: Point your Web browser at **http://www.cygnus.com/xmastree/** or write **santa@north.pole.org** to reach Santa himself.

Gaffin can be reached at **agaffin@world.std.com** via the Internet.

SCO

Continued from page 4

a multiplatform competitor to Microsoft Corp.'s Systems Management Server.

The Visionware product line will help SCO provide its traditional Unix customer base with a "Windows-friendly" product line, said Mark Yahiro, SCO's director of strategic marketing.

"Customers say they want to tie Windows desktops to Unix servers and run Windows and Unix applications from a Windows desktop," he said. "We've never had the expertise on the Windows front end, but we have it on the Unix end. With Visionware, we supply an integrated solution."

The acquisition occurred only days after SCO's board promoted Lars Turndal from president and chief executive officer to chairman and CEO. Alok Mohan, formerly senior vice president and chief financial officer, was named president.

The new executive team has said its priorities include providing more desktop tools and connectivity options. The SCO officials said their biggest rivals at this time are other Unix vendors, but the acquisition may help SCO meet the growing challenge from Microsoft Corp. and its Windows NT software.

Rob Enderle, an analyst with market research firm Dataquest, Inc. in San Jose, Calif., said, "By absorbing Visionware, which has some capabilities on the Windows side of the house, SCO will better understand what the masses want on their desktops." Visionware's direct sales force also gives SCO a new channel, building on SCO's network of systems integrators, OEMs and authorized resellers, he added.

Client/server solutions have come to stay, and corporations are seriously considering them. Unix providers have the challenge of proving we serve that market best."

Lars Turndal

Visionware, which in 1994 doubled its revenue to $12 million, is 6 years old and has 130 employees, most of whom are located at the Leeds, England, headquarters.

Comments?

See "How to reach us" on the back page.

MCI Metro

Continued from page 1

petitive access provider (CAP), the company's construction plans remain sketchy, with officials pointing only to Boston and Los Angeles as places where construction is under way. The company had said it would spend $2 billion to build networks in the nation's 20 largest metropolitan areas by the end of 1995 (*NW*, Jan. 10, page 1).

Even where it has established a beachhead, MCI Metro has not announced a general offering to business users. Instead, MCI long-distance reps are selectively offering dedicated access lines only to their own customers and only in those buildings where landlords have allowed them to attach a fiber ring. The officials refused to release names of customers or quantify the number of fiber route miles constructed.

CAP competition

Despite its war chest and holdings of old Western Union rights-of-way, MCI Metro has made little impact as a CAP.

	MFS Telecom	Teleport	MCI
Founded	1988	1983	1994
Number of cities served	28	19	3
Route miles in place	2,045	3,365	NA
Number of cities with nets under construction	13	4	NA
Switches in place	11	7	0
Available capital (in billions)	$1.0	$2.3 (estimate)	$2.0

NA = Not available

SOURCES: CARRIERS AND FINANCIAL ANALYST ESTIMATES

Long-distance competitors that could save money by using MCI Metro to avoid heavy Bell access charges said MCI Metro has been invisible. "I've not run across them," said Bob Runke, vice president of access management for Sprint Corp.

An AT&T spokesman added, "We haven't been approached by MCI about an access offering."

In fact, MCI Metro's most prominent role to date has been in the state-by-state fights over the right of alternative carriers to offer switched-access services in competition with entrenched monopoly carriers.

"Where we see them today is in the state capitals, the FCC and in policy meetings," said Andrew Lipman, senior vice president of MFS Telecom, Inc., the CAP with the largest number of local fiber nets. "We don't see them nearly as much in the marketplace. We don't see them in ducts, conduits and rights-of-way."

Top MCI Metro officials said the firm's first order of business is to get state authorities to open up the local market because MCI Metro's goal is to become more than an alternative source for T-1 access lines.

"Our business plan from the beginning has been focused on switched access and local dial tone, because that's 90% of the market," said Gary Parsons, MCI Metro's chairman and chief executive officer.

Other CAPs have not waited for switched-access authority before building fiber rings in dozens of cities and leasing additional capacity extending into surrounding regions (see graphic).

And while several CAPs have installed a number of central office switches, MCI Metro has only a single Northern Telecom, Inc. DMS-100 under test.

Analysts said MCI lacks key advantages held by other CAPs in gaining entry to a large number of office buildings in big markets. They note that MFS Telecom's majority owner is a construction company, and Teleport Communications Group of Staten Island, N.Y., has close ties to the cable television industry.

And expansion by these and other CAPs has created a dilemma for MCI, they said, pointing to MCI's own desire as a long-distance carrier to lower its access costs.

"MCI is at a crossroads in what they want to do with MCI Metro," said Christine Heckart, a senior analyst with TeleChoice, Inc., a consulting firm in Verona, N.J. "If there are an increasing number of CAP alternatives available to them, there should be less reason for MCI Metro to have to deploy fiber rings."

According to rivals, MCI Metro's difficulties were predictable, particularly for a company accustomed to building long-haul backbones.

"It's much more difficult to build networks in dense city centers than to go across prairies and cornfields," MFS Telecom's Lipman said.

But Lipman is delighted to have MCI's muscle in legal dogfights with the regional Bell holding companies. "In that regard, they've been a good ally, and we welcome them to the barricades," he said.

Back to Reality

Lessons in deception give network managers a jolt of reality.

BY DAVID J. BUERGER

This week's lesson in reality is sponsored by the letter "D," which stands for deception.

In case you haven't noticed, business dealings are not always honest. A Greek philosopher spotted this trend thousands of years ago, stating: "A market is a place set for men to deceive and to get the better of one another." My, how some things never change.

One recent deception involves Intel Corp.'s vaunted Pentium chip and its problems with division. Intel's whole strategy has been to promote things like desktop videoconferencing and high-speed networking to the desktop, largely to fuel the need for more computing power in servers and desktop computers.

As Pentium's verdict seems to move from bad to worse, users are demanding that Intel repeat the fifth grade. The company is good at marketing but lousy in the apology department.

Prepare to wallow on hands and knees and beg for replacement chips. Start by calling (800) 628-8686, but do not — repeat — do not select the Pentium processor option on Intel's voice answering system. That steers you into a black hole. Wait for an operator and enjoy the first degree. ("No, I haven't read your white paper; I just want the chip!")

We may never know the true degree of Pentium's technical glitches. Intel claimed it's not a big deal, but IBM said, "Mais non!" and canceled sales of its Pentium-based PCs and servers.

Of course, IBM is an unbiased player in this game. I would never say that IBM is casting doubt on Pentium just to sell more PowerPC-based computers.

Perhaps the most ironic deception in L'Affair de Pentium is by the users themselves. They bought the product and believed it was infallible. And we all know that computer software and hardware never make mistakes, right?

Maybe Mrs. Prichard wasn't so dumb when she made us double-check our arithmetic back in grammar school.

I'll take a little common sense any day over a machine.

Lure of the loop

Deceptions can take other surprising forms. MCI, for instance, clearly was deceived by the lure of easy profits in local-loop telecommunications.

Last January, MCI rolled out MCI Metro with great fanfare. MCI was to spend $2 billion and create a new competitive access provider (CAP) that promised local switched service in 20 markets within two years.

And MCI Metro wasn't going to be just another "cream-skimming" CAP that plucked only the low-hanging fruit — namely, business customers. The plan was to also provide plain old telephone service to lowly consumers.

Today, MCI Metro boasts service to 23 buildings in Atlanta. (Mine is not one of them.) Service is just starting in Dallas and Washington, D.C.

What happened? MCI Metro blames Congress for not passing the telecom reform act. It also claims to have underestimated the cost of getting city franchises and rights-of-way. Frankly, that excuse is hard to swallow since MCI invented telecommunications competition — in court.

MCI Metro also may have been deceived by the lock Teleport Communications Group, Inc., MFS Telecom, Inc. and others have on alternative local access. CAPs get less than 1% of all local traffic, yet competition for the scraps offered by local telephone companies is fierce. The regional Bell companies raked in $107 billion during 1993.

Those last numbers make me wonder how long local telephone companies think they can deceive the public about their commitment to open competition as they clamor to compete in the long-distance business. The wool covering our eyes is wearing thin.

Other ruminations

It's hard to say who deceived whom in the newest revelations of MCI's split with Nextel Communications last September.

If the accusations contained in this week's news story are accurate, MCI received short shrift in its contracted evaluation of Nextel's specialized mobile radio technology.

The obvious lesson here is to be wary of independent performance tests. One can never be sure of the motivations behind technical evaluation methodologies, nor of their interpretation.

As one astute observer said, "Figures never lie, but liars sure can figure."

Finally, users of Lotus Development Corp.'s cc:Mail electronic-mail software put their foot down on Lotus' plan to force migration to its forthcoming Communications Server. Lotus agreed to provide cc:Mail server upgrades independent of CommServer.

Users were concerned about swallowing lofty promises of centralized enterprise messaging, not to mention the hefty price tag required by the switch.

They should be concerned. Lotus and arch-rival Microsoft Corp. are both late delivering their messaging server products. Watch for Microsoft to follow Lotus' step next quarter and offer Mail server upgrades independent of Exchange.

You might call this deception prevention. Users know what works now and are wise to maintain status quo until the vendors prove otherwise.

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CyberSpeak

Voices from the reader network

You've been pretty good this year. What network goodies do you hope Santa brings your way?

◆ "I don't want anything for Christmas. As a matter of fact, I don't want anyone to get anything new for Christmas at all! I just want a year where there are no new products that we just HAVE to have and no new updates to software adding features we don't need. Just give me one year to catch up with what we have already."

Neal Steik, system support manager, Johnson & Higgins, Seattle

◆ "I would like Santa to bring me a healthy increase in my networking budget. After all, there is not a whole lot that money will not fix. I would also like a fully loaded notebook computer (for network testing, of course). Oh yes — peace on earth."

Jeff Woods, IS manager, Crowder College, Neosho, Mo.

◆ "I have been a good boy this year. I've collapsed my backbone. My wide-area net uses frame relay and boundary routing technology. I can send E-mail to anybody who has IP or X.400, I'm not picky. I can awk and grep with the best of them. All I really want for Christmas is peace on the 'Net. I know the 'Net has a life of its own, but Santa, I want one, too!"

Steve Foster, a Nashville financial services firm

◆ "I want more periodicals and articles that focus on client problems, instead of those hyping the latest gizmo that is going to solve all of the world's problems. Face it, what sells technology is problems. The more specifically we understand the problems of a particular industry, the better we can address those problems."

Hank Heath, consultant, Medco Systems, Marlton, N.J.

"A fiber network directly to my home."

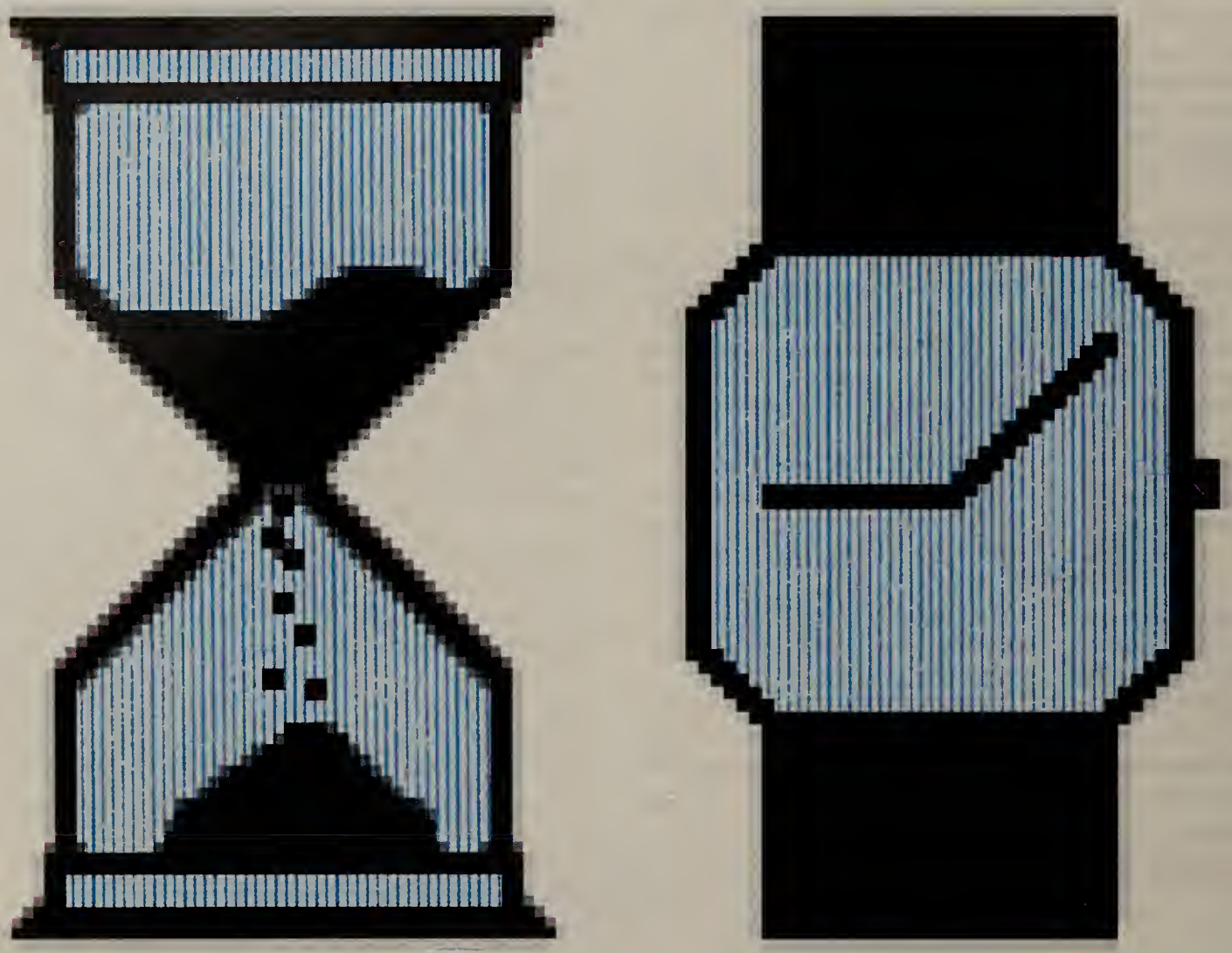
Kurt Haldeman, senior systems analyst, US WEST Marketing Resources, Englewood, Colo.

NextWeek
CyberSpeak Out!

What New Year's resolutions do you need your network management vendors to make?

Responses due by 8 p.m. Thursday, Jan. 5. You'll get a T-shirt if we print your response.
Please include your name, company and address.

PHYSICISTS TELL US ELECTRICITY moves at nearly the speed of light. Apparently, they've never been on a congested network.



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